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A STUDY OF THE EFFECTS OF INTENSIVE ORAL-AURAL ENGLISH LANGUAGE INSTRUCTION, ORAL-AURAL SPANISH LANGUAGE INSTRUCTION AND NON-ORAL-AURAL INSTRUCTION ON READING READINESS IN GRADE ONE.

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*READING READINESS, FIRST GRADE, *LANGUAGE INSTRUCTION, DISADVANTAGED YOUTH, *SPANISH-SPEAKING, SPANISH, ENGLISH, *AUDIOLINGUAL METHODS, READING READINESS TESTS, *BEGINNING READING, AUSTIN, TEXAS, SAN ANTONIO

THE EFFECTIVENESS OF THREE METHODS WERE COMPARED FOR DEVELOPING READING READINESS IN SPANISH-SPEAKING FIRST GRADE CHILDREN. THE METHODS USED WERE (1) ENGLISH LANGUAGE INSTRUCTION WITH AUDIOLINGUAL TECHNIQUES, (2) SPANISH LANGUAGE INSTRUCTION WITH AUDIOLINGUAL TECHNIQUES, AND (3) LANGUAGE INSTRUCTION USING THE SAME MATERIALS AS METHODS ONE AND TWO, BUT WITHOUT AUDIOLINGUAL TECHNIQUES. SAMPLE FIRST GRADE CLASSROOMS WERE ARBITRARILY ASSIGNED TO ONE OF THE THREE TREATMENTS (A TOTAL OF 28 WAS USED). THE "METROPOLITAN READINESS TEST", ORIGINALLY DESIGNED FOR MEASURING READING READINESS FOR AN ENGLISH-SPEAKING POPULATION, WAS USED IN THIS PROJECT TO SECURE PRE-AND POST-TEST CRITERIA SCORES. THIS INSTRUMENT, HOWEVER, PROVED INVALID FOR MEASURING THE EFFECTS OF INTENSIVE ORAL LANGUAGE INSTRUCTION. IN ADDITION, NO OTHER USABLE INSTRUMENT WAS FOUND AVAILABLE FOR ASSESSING LEVELS OF ORAL LANGUAGE DEVELOPMENT FOR THE PROJECT POPULATION IN EITHER ENGLISH OR SPANISH. THIS FACTOR RESULTED IN A HIGHER MEAN ON THE FINAL CRITERION SCORES FOR THE CHILDREN WHO HAD NO AUDIOLINGUAL TRAINING. A LARGE NUMBER OF ZERO SCORES WERE ATTAINED ON THE PRETESTING EXERCISES WHICH CLEARLY DEMONSTRATED, AS WELL, THE INAPPROPRIATENESS OF THE STANDARDIZED TEST FOR THE SAMPLE GROUPS. DIFFERENCES BETWEEN THE TREATMENT GROUPS ON THEIR POST-TEST MEAN SCORES WERE NOT SIGNIFICANT. IT WAS DETERMINED THAT ADDITIONAL RESEARCH CLEARLY NEEDED TO BE ACCOMPLISHED IN THE FIELD. (JH)

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A STUDY OF THE EFFECTS OF INTENSIVE ORAL-AURAL ENGLISH LANGUAGE INSTRUCTION, ORAL-AURAL SPANISH LANGUAGE INSTRUCTION AND NON-ORAL-AURAL INSTRUCTION ON READING READINESS IN GRADE ONE

Cooperative Research Project No. 2648

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Graduate students contributing to the San Antonio study through dissertation activities include: Gloria Jameson, assessment of phonological difficulties; Robert MacMillan, assessment of the effect of socio-economic factors upon academic achievement; and Neil McDowell, analyses of ethnic differences in academic achievement. Two members of the Project staff, Elizabeth H. Ott and Albar Pena, also have dissertation problems focussed on the Project pupil population.

[redacted]

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CHAPTER I

THE PROBLEM AND OBJECTIVES OF THE STUDY

Introduction

Of the approximately 3,500,000 people of Mexican origin or ancestry who reside in the United States, some 40 percent or 1,400,000 identify Texas as their state of residence. In addition, Texas border cities, e.g., El Paso, draw additional thousands of Mexican nationals who cross the Rio Grande daily to enter into the social and economic activities of the city. The majority of the Mexican-Americans living in Texas are native Spanish-speakers who live and work in an English-speaking environment; ordinarily, they may be classified as culturally disadvantaged.

Of the total population of San Antonio, Texas, where USOE Project No. 2648 operated in 1964-65 (and is currently operating supported by limited funds from the College of Education, Research and Development Center), 42 precent are Latin-American; the prediction is that this percentage will increase. In the project area, 55 percent of the families have annual incomes of less than $3,000 per year with an average membership per household of 5.4. This figure may be considered conservative in view of the difficulty of getting precise figures for official Census purposes. Of the population 18 years of age and older, 91 percent have less than a high school education; the median years of school completed is 4.7 for individuals 25 years of age and over. The situation described in San Antonio is duplicated or approximated in many areas of Texas, particularly in the Rio Grande Valley area.

In the past, as well as the present, our educational system has been designed for the so-called "average-native-English-speaking-middle-class child." The negative results of such a program may be seen by the fact that approximately 80 percent of the beginning first grade pupils from a non-English background have been retained in Texas schools because of their inability to read on a basis comparable to pupils for whom English is the native language. Such retentions have given rise to the erroneous notion that Spanish-speakers are "slow learners." Actually, these pupils merely learn more slowly in English than they do in Spanish.

Despite the gains made this year in "Headstart" programs, at least in some cases, most of the teachers involved in such "catch up" operations do not have adequate training in handling disadvantaged children and in teaching English-as-a-second-language with all this implies. Likewise, the programs themselves vary widely, very often on a continuum of from zero on. Criteria for evaluating programs for disadvantaged pupils, developed by The University of Texas Project staff, are attached as Appendix I.

Many of the Spanish-speaking children retained in first grade suffer from extreme economic poverty and from general family illiteracy. Some do not succeed because of poor attendance caused by family migration or lack of parental interest. Some hitherto unidentified anthropological or other factors, such as the Envidia Sanction (Rubel, 1965), may cause additional negative affects. In any case, the largest single cause of failure is by far the language barrier. Not only do pupils themselves fail to attain a reasonable semblance of a standard American English dialect, the oral language model provided by the teachers themselves is very often non-standard.

The Headstart programs of 1965 were antedated in the State of Texas by the Pre-school Program for Non-English-speaking Children. The gross result of this instruction for 1962-63 may be shown by the data below, based upon 136 school districts reporting reasonably accurate information. The 136 school districts reported on a total of 30,741 non-English-speaking children who entered first grade in the fall of 1962. Of this number 15,519 attended a pre-school program; 15,222 did not participate in a pre-school program. Of these:

	Who Attended Preschool	Who Did Not Attend Preschool
1. Number who attended most of school year	13,762	10,578
2. Number promoted to second grade (social promotions not included)	9,569	3,044*
3. Number who dropped out of school and have no record of re-entry	1,757	4,644

*An additional 1,991 pupils were given social promotions due to being over-age: there were no social promotions for group who attended preschool because any retention would be the first for these school beginners and none would be over-age until after repeating grade one.

In order to have any meaningful effect on the reading readiness of Spanish-speaking school beginners, it is clear that an intensive oral language program must precede any attempt to begin the usual basal-reading program or any other variant of the basal program. Improved teacher competence in the handling of English-as-a-second-language, the development of pupils' thinking skills, understanding of the contributions of Spanish culture to instruction, and a better understanding of the psychological, social and economic factors affecting the curriculum and instruction for Spanish-speaking pupils must be combined to: (1) make reading success for these pupils possible; (2) avoid retention; and (3) combat ultimate pupil drop-outs.

Statement of the Problem

The primary purpose of this study was to compare the effectiveness of three methods of developing reading readiness in Spanish-speaking boys and girls in the first grade. The original specific questions were to be:

(1) Will there be significant differences among the mean scores (Reading Readiness in May of the experimental year) of the three groups undergoing different methods of instruction?

Analyze for: ----Total sample population
----Spanish-speakers only
----Spanish-English-speakers

(2) Will there be any difference between the Readiness scores earned by boys and by girls when Pre-test scores (General Ability Test, September) are held constant?

(3) Will there be any differences among the Readiness scores of the three different method groups when General Ability scores (September) are held constant?

(4) Will there be any differences among the Readiness scores of the three different method groups when General Ability scores (December) are held constant?

(5) Will there be any difference between the Readiness scores of the Spanish-only and the Spanish-English-speaking groups when the General Ability scores (September) are held constant?

(6) Will there be any differences among the Readiness scores of the following sub-groups when the Inter-American General Ability (September) scores are held constant?

a. Spanish only, Method A
b. English-Spanish, Method A
c. Spanish only, Method B
d. English-Spanish, Method B
e. Spanish only, Method C
f. English-Spanish, Method C

(7) Will there be any improvement in General Reading Ability between the September and December administrations of the General Ability Test?

When the project was inaugurated, it became immediately apparent that: (1) the project staff would have to administer all tests to insure reliability; (2) the breadth of the problems involved in teaching Spanish-speaking school beginners far exceeded initial expectations; (3) due to the limited budget and size of the project staff, December and March testings had to be abandoned; and (4) differentiation between "Spanish-speakers only" and "Spanish-English-speakers" was academic, since over 99 percent of the population in the study entered school speaking no English. Little imagination is required to see how little validity current standardized tests have for such a pupil population.

For the above reasons, only data involving questions one (Spanish-speakers only), two and three were subjected to analysis.

Actual Scope of Study

The initial research proposal offered a design for the study of the first of five significant educational problems indicated below. The actual scope of the study went so far beyond this point (items 2 - 5) that serious problems of staff overload and budget resulted.

(1) Reading readiness instruction: (a) utilizing audio-lingual techniques in English; (b) utilizing audio-lingual techniques using Spanish; and (c) utilizing readiness techniques current in the San Antonio Independent School District to prepare pupils to enter the basal reading program. The audio-lingual techniques in both English and Spanish were based upon "culture fair" science materials. "Culture fair" refers to materials which, hopefully, do not contain elements providing an unfair advantage to pupils of either Spanish-American or Anglo cultures. Group 3, above, used the same science

materials as Group I and Group 2, but without the audio-lingual instruction. The tentative conceptualization of a curriculum for educationally disadvantaged Spanish-speaking children developed by project staff is described in Appendix II. Sample lesson plans in English are attached as Appendix III and lesson plans in Spanish are attached as Appendix IV. Actually, these plans were not in the original proposal but were essential to the effectiveness of the project.

(2) Development of pupil experiential backgrounds based upon: (a) the elementary process-oriented curriculum (EPOC, USOE Contract No. 4-10-201, Butts); and (b) areas necessary for successfully competing in an Anglo-American setting (Texas Education Agency, Bulletin 642). Sample materials are attached as Appendix V.

(3) In-service education of teachers of the culturally disadvantaged through: (a) new techniques and materials which had to be developed by the project staff which dealt with the language and experiential development of culturally deprived Spanish-speaking pupils; (b) sharpening the very special psychological and sociological insights required by teachers of disadvantaged children; (c) clarification of the theoretical models underlying the new techniques and materials; (d) clarification of the psychology of language learning impinging upon the special emotional, social and economic needs of these children; and (3) stimulation of teachers to develop new materials in addition to those supplied by the project staff. It was assumed that no educational undertaking can be successful without effective in-service activities based upon competent consultants.

(4) Preparation of new reading materials other than available basic texts, beginning with the equivalent of the preprimer level in: (a) English; and (b) Spanish.

(5) Continued study of tests appropriate to the Spanish-speaking population (Manuel, USOE Project No. 681) and the construction of new instruments, especially those specifically designed to assess: (a) oral language abilities; and (b) pupil self-concept.

Objectives

In addition to the questions listed under the statement of the problem for which answers were sought, basic objectives of the study were as follows:

(1) To break through current methods and materials which have resulted in pupil failure, retention and ultimate school drop-out.

(2) To achieve a restructuring of teacher attitudes toward the Spanish-speaking school beginner which would foster a wholesome learning environment.

(3) To delineate in meaningful terms the forces affecting academic achievement by Spanish-speaking pupils, forces for which the schools may or may not be able to provide some form of compensatory education.

(4) To provide a reasonably defensible research base for using socio-economic and/or psychological data to predict the level of pupil achievement in school. If this is found possible, schools would be in a position to research compensatory educational programs in terms of their ability to overcome those factors which evidence a negative affect on school achievement.

(5) To obtain data which will enable defensible decisions to be made

concerning: (a) the role of oral language in the education of Spanish-speaking pupils; (b) the nature of "bi-lingualism" with particular reference to both positive and negative potentials for curriculum planning; (c) ways in which an educational program might be planned for Spanish-speaking pupils which would simultaneously develop cognitive and linguistic skills, using the basic content areas, e.g., science, social studies, mathematics, health and the like, as vehicles for language skill development; and (d) ways of enabling Spanish-speaking pupils to develop positive self-concept.

(6) To identify or develop diagnostic and achievement tests which are valid and reliable for the Spanish-speaking population.

(7) To develop more effective and pertinent in-service teacher education programs for teachers of Spanish-speaking pupils.

Attainment of the objectives stated above is contingent upon continuing financial support adequate to provide sufficient staff, materials, equipment and data analyses. The scope of the original study encompassed only the first problem, stated on page 5, concerned with reading readiness. Data concerning more specific questions relating to this problem are analyzed in Chapter III.

Related Research

A recent study (Cooper, 1964) on "Effects of Different Amounts of First-grade Oral English Instruction upon Later Reading Progress with Chamorro-speaking Children" identifies as a major problem the successful in-service education of teachers participating in the experiment. The results of this study were inconclusive, very likely due, in the investigator's opinion, to "the failure of careful teacher supervision to produce changes in pupil learning," and the fact that a linguistic analysis of the Chamorro language had not been made. The literature relating to the problems encompassed by the present proposal is extremely limited. However, several current projects have been identified as follows: (1) Dade County, Florida (Rojas), supported by the Ford Foundation; (2) University of California at Los Angeles (Grebbler), Ford Foundation grant to study the social and economic position of Mexican-Americans; (3) the Houston, Texas (Munoz) program in out-of-school instruction in Spanish; (4) Fresno, California (Manning), Spanish-speaking school beginners; and (5) Colorado State Department of Education (McCanne), Spanish-speaking school beginners.

The bibliography of readings pertinent to this study appears immediately following Chapter IV.

CHAPTER II

PROCEDURES

General Design

Twenty-eight first-grade classrooms were arbitrarily assigned to one of the three treatments: (1) nine to oral-aural English; (2) ten to oral-aural Spanish (all teachers of this treatment spoke both Spanish and English); and (3) nine to no-oral-aural treatment. Also, twenty-four classrooms were selected from other schools in the San Antonio Independent School District and administered a portion of the tests. Testing this latter group placed in better perspective the scores attained by the Spanish-speaking classrooms in terms of other socio-economic levels and ethnic groups. Additional data concerning socio-economic factors were also collected (see Appendices IX-XII).[1] A more complete description of the rationale for the study is provided by Stemmler.[2]

The following describes the methods treatments:

(1) Group 1, Oral-Aural English: Intensive language instruction in English (using "culture fair" science materials with audio-lingual techniques), hereafter referred to as OAE. OAE instruction of one hour per day replaced readiness instruction of one hour rather than being given in addition to such time allotments. An example of instructional materials and techniques is attached as Appendix III. Consultative services were provided weekly by members of the project

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[1] Robert MacMillan, "A Study of the Effect of Socio-Economic Factors on the School Achievement of Spanish-Speaking School Beginners." Doctor's dissertation (in progress), The University of Texas, Austin 78712.

[2] Anne O. Stemmler, "An Experimental Approach to the Teaching of Oral Language and Reading." Harvard Educational Review, Volume 36, Number 1, Winter, 1966, pp. 42-59.

staff for materials development and in use of the audio-lingual techniques in English.

(2) Group 2, Oral-Aural Spanish: Intensive language instruction in Spanish (using "culture fair" science materials with audio-lingual techniques), hereafter referred to as OAS. OAS instruction of one hour per day replaced readiness instruction of one hour rather than being given in addition to such time allotment. An example of materials and techniques used with the OAS group is attached as Appendix IV. Consultative services were provided weekly by project staff for materials development and in use of the audio-lingual techniques in Spanish.

(3) Group 3, No Oral-Aural: No intensive language instruction with audio-lingual techniques, but using the same "culture fair" science materials as in Groups 1 and 2 above. This was considered the "regular" science time allotment rather than reading readiness. This group is hereafter referred to as NOA. Weekly consultative services were provided by the project specialist in elementary school science. The major function of the NOA group was to provide data concerning possible "halo" effects, *e.g.*, consultant attention and merely trying something different, caused by the Group 2 and 3 activities and to determine the effect, if any, of the science materials alone on language and cognitive development and reading readiness. The "regular" reading readiness program outlined by the school district was followed in preparation for use of the locally adopted basal reading series (Ginn).

(4) Group 4, "Control": In addition to the above treatments, a sample population of pupils from grade one was selected from schools

representing the entire first-grade population in the San Antonio Independent School District, some of which were comparable to the experimental groups in deprivation characteristics and others which represented other ethnic groups and other socio-economic levels. Teachers of these classes used neither the special science materials nor the audio-lingual techniques and received no consultative services from the project staff. The "regular" reading readiness program was followed as preparation for the locally adopted basal reading series (Ginn).

The purpose of this sample was to detect contamination, if any, of the NOA treatment by the OAE and OAS treatments through teacher contacts. Also, it appeared desirable to place the sample populations in the OAE, OAS and NOA treatments in perspective with regard to the total pupil population.

Variables: Data concerning independent variables were recorded in such areas as (1) methods; (2) pupils (sex, chronological age, mental age, ethnic class, amount of pre-first-grade school experience); (3) teacher (sex, age, highest degree held, type of teaching certificate, number of years of teaching experience, number of years of experience with level or experimental group and marital status); (4) school (number enrolled in pupil's classroom, length of school day, length of school year, number of first-grade rooms in the school district and type of library facilities available to the class); and (5) community (median number of years of education completed by adults living within the school community, median income, size of population and type of community).

Pupil variables were controlled in part through: (1) use of the class as a sample unit; (2) analysis for differences when the General Ability scores were held constant; and (3) selection of schools for the experimental treatments in which the population was 90 percent or more Spanish-speaking, and in which the population fell in the lower-lower to lower-middle socio-economic classifications.

Methods in teacher variables were controlled in part by: (1) use of the class as a sample unit; (2) teacher orientation to and instruction in methodology and materials development; (3) use of demonstrations for providing teaching models; and (4) consultative services as an essential part of an extensive in-service program throughout the 140-day learning period as well as a three-day pre-school in-service program.

Dependent variables are described in the section on data and instrumentation.

Instructional materials: Group 1 and Group 2 pupils used materials developed by the project staff (see Appendix III and IV). In addition, Groups 1, 2 and 3 used instructional units based upon the Texas Education Agency Bulletin 642 (see Appendix V). Group 3 used the EPOC science materials without the audio-lingual techniques and proceeded with reading readiness as usual, using the locally adopted basal series (Ginn). Group 4 proceeded as usual without special project consultative services, materials or in-service education, using the locally adopted basal series (Ginn).

Differentiation of Instruction: When the intensive audio-lingual instruction proceeded to a point where teachers felt that pupils were approaching readiness to read, a reading readiness checklist (see Appendix VI) was administered. The areas of readiness included in the checklist were: (1) language development; (2) physical factors; (3) social factors: (4) emotional factors; (5) auditory perception; (6) visual perception; (7) experiential backgrounds; and (8) cognitive ability.

Population and Sample

The classrooms assigned to OAE, OAS and NOA were selected on the criterion that 90 percent or more of each class were Spanish-speakers. The original gross descriptions planned for descriptions of language levels were abandoned since approximately 98 percent of the pupils spoke no English at the time of initial testing. Of the total San Antonio population, 42 percent were Latin Americans; this percentage is predicted to grow. In the project area, as stated in the Introduction, 55 percent of the families have annual incomes of less than $3,000 per year with an average membership per household of 5.4. Of the population 18 years and older, 91 percent have less than a high school education; the median years of school completed for individuals twenty-five years of age and over is 4.7. It is, therefore, clear that two major characteristics of the project population were: (1) little or no command of English; and (2) cultural deprivation.

Rough measures used to classify pupils as English-speakers or otherwise may be described as follows: (1) little or no facility in English; (2) able to understand directions, but not carry on a conversation in English; and (3) able to converse in English. Spanish-speakers may be classified according to the following: (1) language used in the pupil's home is Spanish; (2) Spanish is the language used, (a) initially by the child, (b) the majority of the time by the child, and (c) the mother's native language if different from the father's. Whether or not such classifications are so gross as to be relatively meaningless is a matter for conjecture, but in the absence of appropriate oral language assessment instruments, little more than this appears to be possible.

For all experimental and control groups, the intelligence levels were expected to be normally distributed; the test used (Goodenough-Harris Draw-A-Man), while possibly of questionable validity, was the only reasonably valid group test available for this particular pupil population.

The socio-economic status ranged from lower-lower to lower-middle; entrance age was approximately six years plus some older children who had no English-speaking ability; there were no kindergarten provisions other than, in some instances, the state-supported preschool instructional program for non-English-speaking children ("Headstart" programs began in 1965); the general level of first-grade reading achievement in previous years ranged from non-English-speaking non-readers to various stages of reading readiness to a relatively few pupils who approached second-grade achievement or above as expected from the usual first-grade classrooms composed of native English-speakers.

Comparisons between groups have been made through analyses which are described in Chapter III.

Data and Instrumentation

Some instruments utilized in the study were classified as "unique" since they were not used by other first-grade studies except the Fresno, California study (Manning) and the Colorado study (McCanne). "Unique" data were secured by administering the Goodenough-Harris Draw-A-Man Test,[1] the Inter-American Test of General Ability (Spanish),[2] the Brengelman-Manning Test of Linguistic

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[1] Dale B. Harris, Goodenough-Harris Drawing Test, Harcourt, Brace and World, Inc., New York, 1963.

[2] Herschel T. Manuel, Serie Interamericana; Prueba De Habilidad General, Nivel 1, Primario, Forma DEs (HG-1-DEs), Guidance Testing Associates, Austin, Texas, 1962 (Research Edition).

Capacity,[1] and the Inter-American Series, Tests of Reading, Level 1 (administered in both Spanish and English).[2]

However, the complete analyses of data provided by the above instrumentation will appear in a supplement to this report. As shown in Chapter III, the extremely high incidence of zero scores in the initial testing indicates doubtful test validity for most instrumentation selected for use by the first-grade studies in terms of the pupil population selected in San Antonio, Texas.

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[1] Frederick H. Brengelman and John C. Manning, Linguistic Capacity Index, University of Minnesota, Minneapolis, 55455.

[2] Herschel T. Manuel, Inter-American Series, Tests of Reading, Level 1, Primary, Form DE, Guidance Testing Associates, Austin, Texas, 1965.

CHAPTER III

RESULTS

As described in Chapter II, a total of twenty-eight first-grade classrooms in the San Antonio Texas Independent School District contained approximately 900 pupils of whom 99 percent were Spanish-speaking school beginners. (One Negro was included in the project in an OAS section.) These classrooms were arbitrarily assigned to the project. Ten classrooms received intensive oral-aural instruction in Spanish (OAS) based on science content (all OAS teachers were bilingual); nine classrooms received intensive oral-aural instruction in English (OAE) based on science content; and nine classrooms (NOA) formed the original "control" group which used the same science content as the OAE and OAS groups, but received no intensive oral-aural instruction. Still another sample was drawn from varying ethnic and socio-economic levels as an additional "control" group. Analyses involving this fourth group will appear in a subsequent report.[1] Detailed analyses of the effects of socio-economic factors will also be reported later.[2]

The original number of pupils in the sample exceeded 900. Of these, complete initial data were secured for 735. However, such reasons as transfers, drop-outs and absences resulted in missing or incomplete criterion test scores, so the number of pupils in the sample for whom complete data were available is 584. The total N is distributed in the following manner:

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[1] Neil McDowell, "Status Study of the Academic Capabilities and Achievements of Three Ethnic Groups: Anglo, Negro and Spanish Surname in San Antonio, Texas." Doctor's dissertation (in progress), The University of Texas, Austin 78712.

[2] Robert MacMillan, "A Study of the Effect of Socio-Economic Factors on the School Achievement of Spanish-Speaking School Beginners." Doctor's dissertation (in progress), The University of Texas, Austin 78712.

$$\begin{aligned} OAE &= 186 \\ OAS &= 204 \\ NOA &= \underline{194} \\ & 584 \end{aligned}$$

There are 316 boys and 268 girls in the sample.

Instrumentation

For analysis purposes the following instruments were used:

(1) Pre-test: Pupils in each of the OAE, OAS and NOA methods treatments used the Inter-American Test of General Ability, Level One, Form DS (Spanish). A complete list of tests used is attached as Appendix VIII.

(2) Post-test: Pupils in all groups were administered the Metropolitan Reading Readiness Test, form A.

In view of the pile-up of scores at the zero-plus levels for the Metropolitan,[1] Murphy-Durrell[2] and Thurstone[3] for the initial data, these test results are not included in the basic analyses. The inappropriateness of the foregoing tests for this population is clear from even a superficial examination of the distributions of scores and comparisons with national norms which follow.

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[1] Metropolitan Readiness Tests, Form A. Gertrude H. Hildreth, Nellie L. Griffiths and Mary E. McGauvran. Harcourt, Brace and World, Inc., New York, 1964.

[2] Murphy-Durrell Diagnostic Reading Readiness Test, Revised Edition. Helen A. Murphy and Donald D. Durrell. Harcourt, Brace and World, Inc., New York, 1964.

[3] Identical Forms. L.L. Thurstone and T.E. Jeffrey. The Psychometric Laboratory, The University of North Carolina, 1956 (Research Edition). Also, an Experimental Form, Pattern Copying, released by Thelma G. Thurstone (Research Edition).

Distributions of Pupil Scores

Metropolitan Readiness Tests

Word meaning and listening: Both the Word Meaning and Listening sub-tests are sixteen item-tests. The Word Meaning sub-test is designed to measure "the child's store of verbal concepts."[1]

The Listening sub-test, according to the authors, "strives to tap the child's ability to comprehend phrases and sentences. In certain of the items there is need for the child to make inferences beyond a literal understanding of what he hears."[2]

Of the 584 first graders on the project, 67 scored zero on the Word Meaning section (see Figure I). Seventy-one scored zero on the Listening sub-test (see Figure II).

Using the information published in the Manual of Directions[3] as a basis for interpreting local scores,[4] 573 (96.4 percent) of the children in the project scored within the first quartile on the Word Meaning section. The remainder of the group scored within the second quartile, but no one scored high enough to place within the third quartile. The concentration of scores at the low end of the scale indicates a positively skewed curve with a tendency to be bi-modal (see Figure I).

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[1] Metropolitan Readiness Tests, Form A. Op.cit. p. 11.

[2] Ibid., p. 11.

[3] Ibid., p. 9.

[4] The terms "local" and "project" are used interchangeably in this section describing the San Antonio project norms.

Interpretation of the raw scores for the Listening sub-test also indicates a tendency for the distribution to be bi-modal and positively skewed (See Figure II). Five hundred and fifteen children, or 89.9 percent, were ranked within the first quartile. Only four children, 0.6 percent, scored within the third quartile.

According to the national quartile rankings found in the Manual of Directions, 96.4 percent of the project children are "almost surely deficient in the skill or ability measure" by the sub-test, Word Meaning, and 89.9 percent by the sub-test, Listening.[1] These percentages suggest highly inappropriate instrumentation for the project population.

The means for the local norms are 2.99 for the Word Meaning sub-test and 3.97 for the Listening sub-test. Means, computed as part of the national norms, are 8.67 for the Word Meaning and 8.89 for the Listening subtests (see Table I).

When project children are categorized according to readiness status as defined in Table II, 98.1 percent are in levels D and E. Three hundred forty-two, or 58.5 percent, of the children are in level E. By comparing the distribution of local raw scores, as distributed within the five categories, and a normal distribuicn as represented by a bell-shaped frequency curve, the extent of the concentration of low scores can be further illustrated.

In a normal distribution, approximately 7.9 percent of the scores would be above +1.5 sigmas from the mean. The project population had no representation in this area. At the other extreme, -1.5 sigmas from the mean, 58.5

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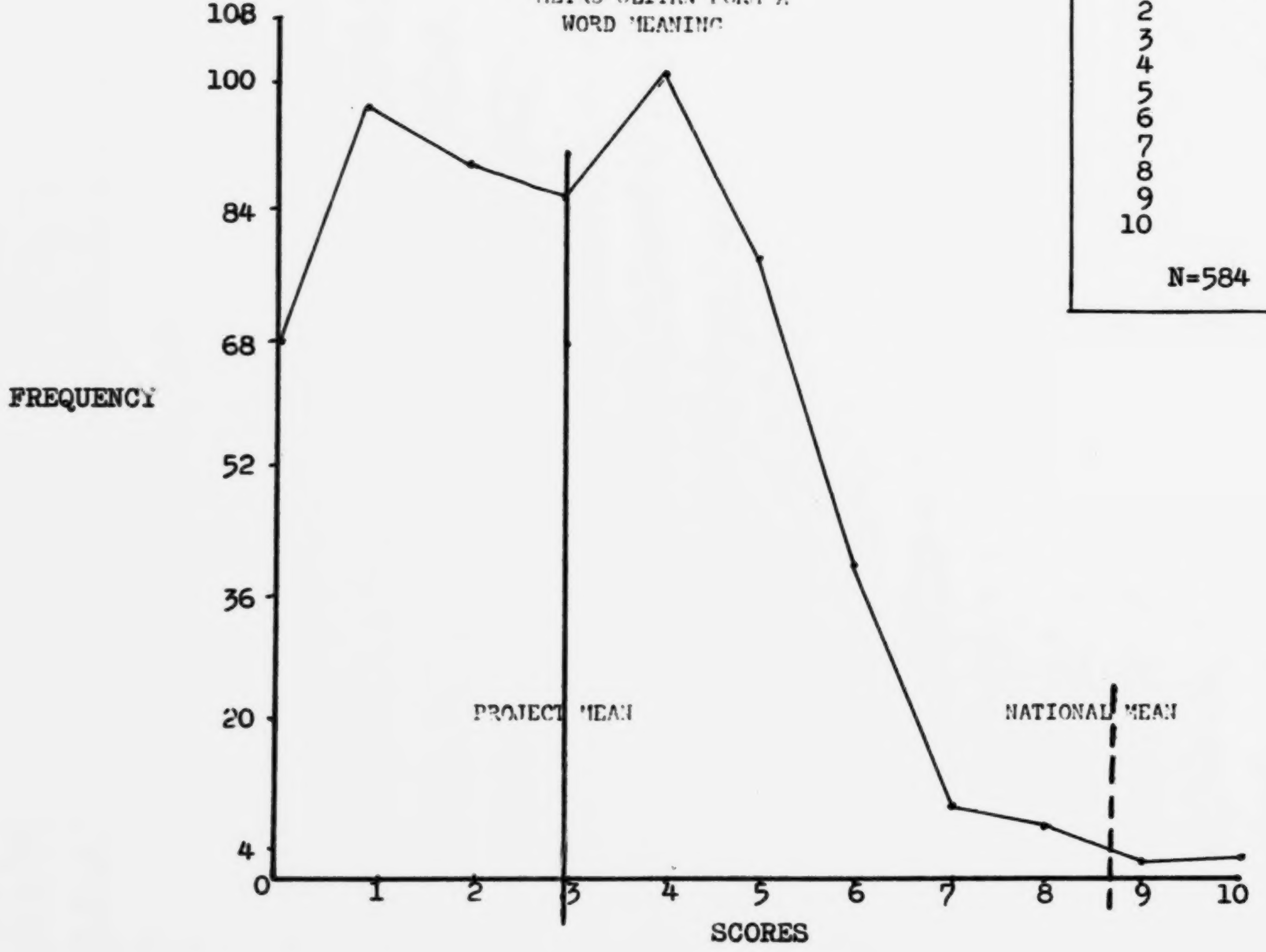
[1] Metropolitan Readiness Tests, Form A., op.cit., p. 9.

FIGURE I

METROPOLITAN FORM A
WORD MEANING



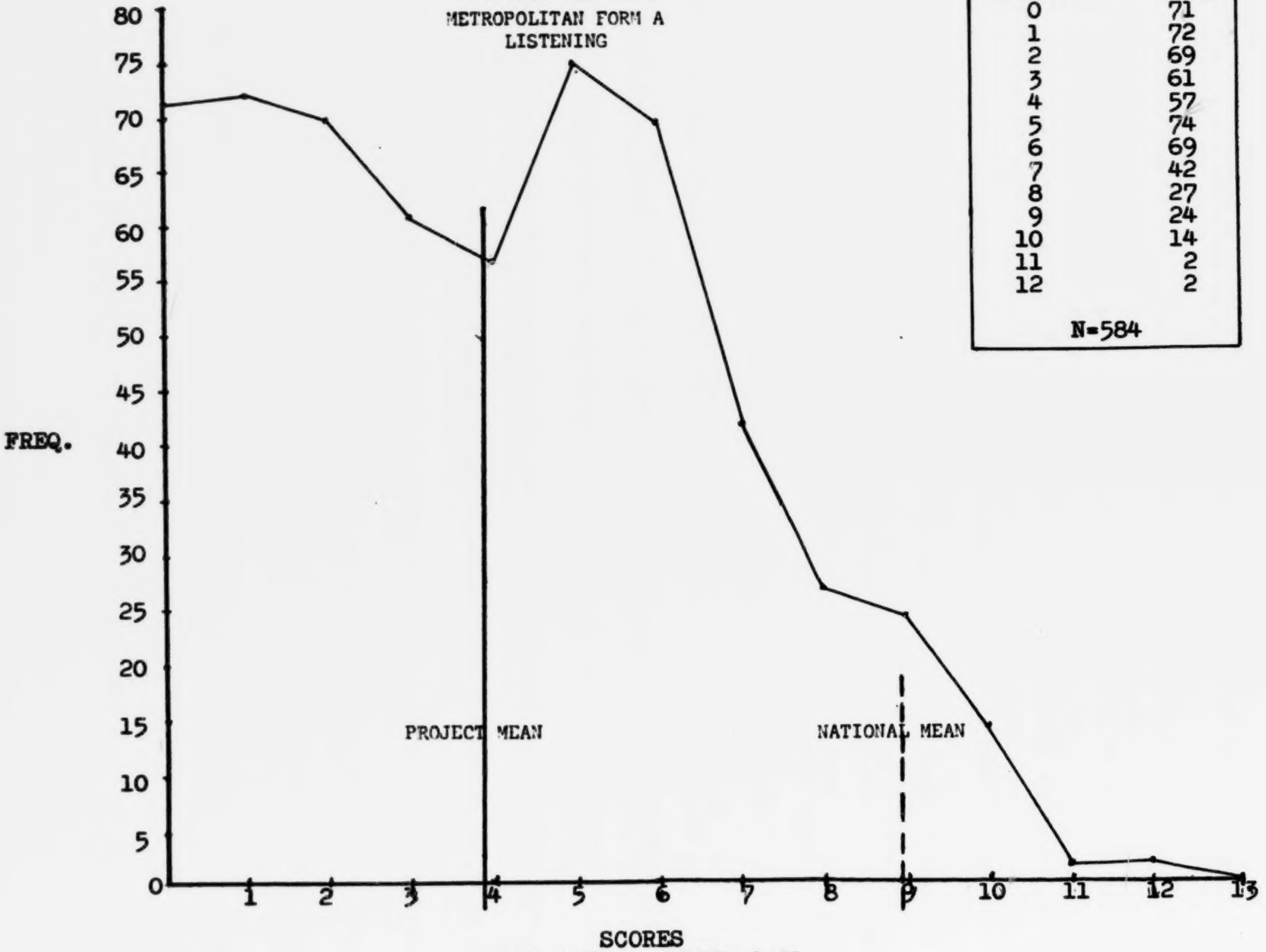
MEAN=2.99
SIGMA=2.01

RAW SCORE	FREQ.
0	67
1	97
2	91
3	87
4	102
5	79
6	40
7	10
8	7
9	2
10	2

N=584

FIGURE II

METROPOLITAN FORM A
LISTENING



RAW SCORE	FREQ.
0	71
1	72
2	69
3	61
4	57
5	74
6	69
7	42
8	27
9	24
10	14
11	2
12	2

N=584

MEAN=3.97 SIGMA=2.81

percent of the local scores were in this area, compared with the projected 7.9 percent for a normal curve. Under a normal curve some 34.13 percent of the frequency scores would be between +.5 sigma and -.5 sigma from the mean. Within the project, only 1.8 percent scored within this area.

The suitability of the Metropolitan Readiness Tests for the project sample is highly questionable when the difference between the national norms and local norms is analyzed. The predictive validity of a test supposedly indicates which pupils will succeed and which will not. It is certainly safe to say, however, that pupils who do not speak English in grade one will not learn to read English as well as pupils for whom English is their native language. With 98 percent of the project sample falling within the two lowest categories (D and E), there is little discrimination between levels of ability as determined by the two sub-tests.

Murphy-Durrell Reading Readiness Analysis

Phonemes and Letter Names (total, both small and capital letters): Of the 584 children who took the Phonemes and Letter Names sections of the Murphy-Durrell Reading Readiness Analysis Tests, 107 scored zero on the Phoneme section and 135 scored zero on the Letter Names (total) section. The Manual of Directions advises that zero scores "should be regarded only as evidence of the fact that a pupil receiving such a score in a particular test is not adequately measured by that test."[1] This statement is so true for the San Antonio pupil population.

From the foregoing data, it seems legitimate to generalize that the Phoneme sub-test did not adequately measure 18.3 percent of the children

---

[1] Murphy-Durrell Reading Readiness Analysis. Manual of Directions, p. 14.

TABLE I

A COMPARISON OF NATIONAL AND LOCAL MEANS AND STANDARD DEVIATIONS FOR METROPOLITAN READING READINESS FORM A SUBTEST SCORES

TEST	MEAN		STANDARD DEVIATION	
	National	Local	National	Local
Word Meaning	8.67	2.99	3.10	2.01
Listening	8.89	3.97	2.82	2.81

SOURCE: Metropolitan Reading Readiness Test, Form A, Manual of Directions, (New York: Harcourt, Brace & World, Inc., 1965) pp. 16

TABLE II

A COMPARISON OF NATIONAL AND LOCAL READINESS STATUS BASED ON METROPOLITAN READINESS TESTS

1965 REVISION

Readiness Status*	Word Meaning		Listening	
	Raw Score National	Number in Category Local	Raw Score National	Number in Category Local
A	14-16	0	13-16	0
B	11-13	0	11-12	4
C	8-10	11	8-10	65
D	4- 7	231	5- 7	185
E	0- 3	342	0- 4	330

* Based on the following sigma distances:

A= above +1.5 sigmas
B= +.5 sigma to +1.5 sigmas
C= Mean -.5 sigma to mean +.5 sigma
D= -1.5 sigmas to -.5 sigma
E= Below -1.5 sigmas

Source: Thermofax Letter From Test Department; Harcourt, Brace & World, Inc., New York, New York

TABLE II

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1965 REVISION

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A	14-16	0	13-16	0
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E	0- 3	342	0- 4	330

* Based on the following sigma distances:

A= above +1.5 sigmas
B= +.5 sigma to +1.5 sigmas
C= Mean -.5 sigma to mean +.5 sigma
D= -1.5 sigmas to -.5 sigma
E= Below -1.5 sigmas

Source: Thermofax Letter From Test Department; Harcourt, Brace & World, Inc., New York, New York and Letter Names (total) did not adequately measure 23.1 percent of the subjects (see Figures III and IV) according to statements in the Manual of Directions for the test.

A comparison of national norms with project norms further accentuates problems of language and educational deprivation within the study sample. The Murphy-Durrell Manual of Directions states, "zero scores are not assigned to any percentiles or stanines or otherwise interpreted."[1] Using only positive scores, and basing percentile rankings on the Murphy-Durrell recommended norms, over 68 percent of children scored only within the first or second percentile on the Phoneme sub-test. This does not include the 18.3 percent who scored zero. Only one child was able to reach the 70th percentile.[2]

For the Letter Names (total) sub-test, 27.7 percent of the children ranked within the first and second percentile. Over 65 percent of the sample scored at or below the 20th percentile. One child scored as high as the 72nd percentile.[3]

The conclusion that the two Murphy-Durrell sub-tests used are not valid for the project group is further supported by the differences in the means and standard deviations for the local and national norms as illustrated in Table III. A comparison of the grouping of national and local scores within certain quartiles also indicates the lack of validity of the Murphy-Durrell test for the project group (see Table IV).

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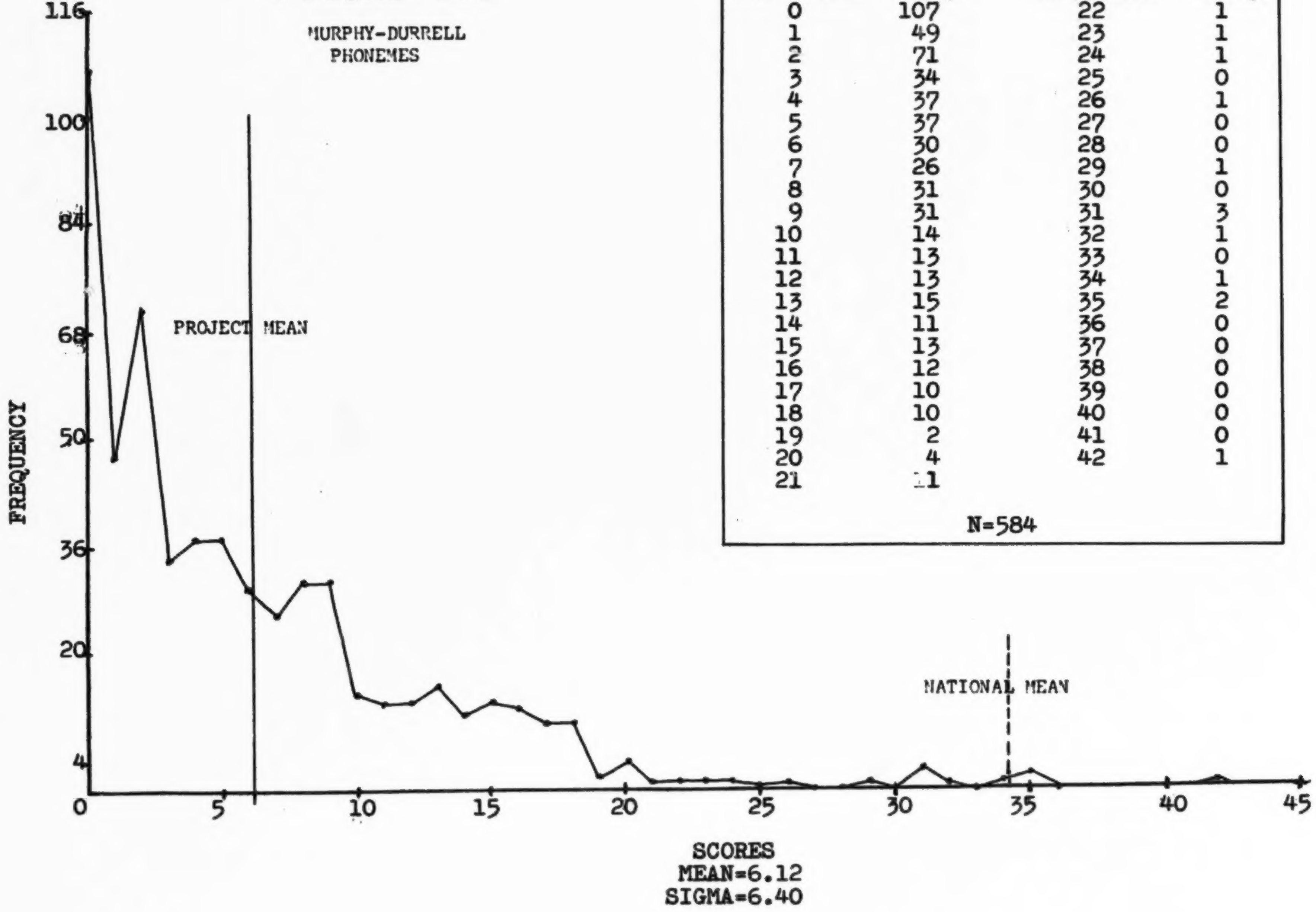
[1] _Ibid._

[2] _Ibid._, p. 15.

[3] _Ibid._, p. 15.

FIGURE III

MURPHY-DURRELL
PHONEMES

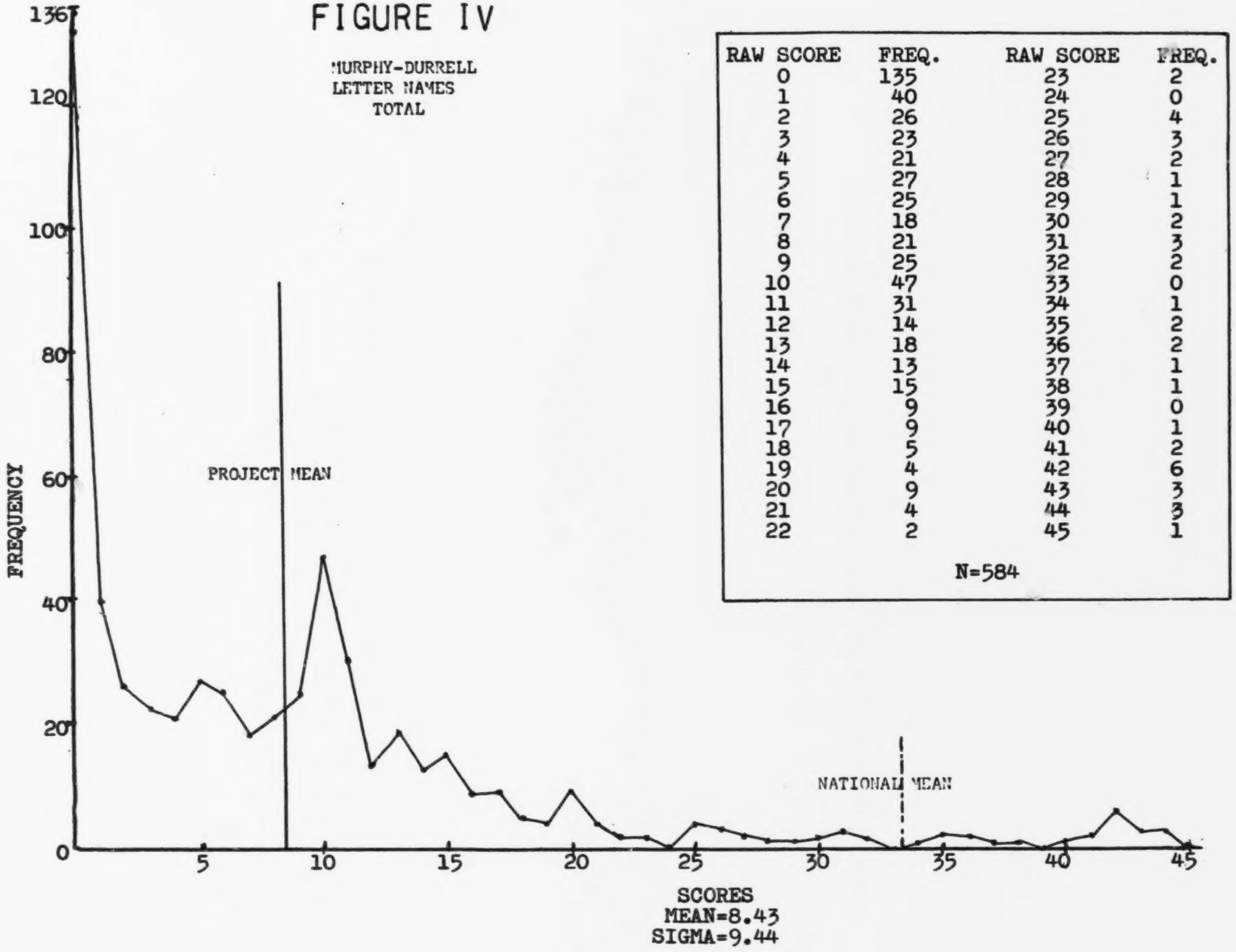


RAW SCORE	FREQ.	RAW SCORE	FREQ.
0	107	22	1
1	49	23	1
2	71	24	1
3	34	25	0
4	37	26	1
5	37	27	0
6	30	28	0
7	26	29	1
8	31	30	0
9	31	31	3
10	14	32	1
11	13	33	0
12	13	34	1
13	15	35	2
14	11	36	0
15	13	37	0
16	12	38	0
17	10	39	0
18	10	40	0
19	2	41	0
20	4	42	1
21	1		

N=584

FIGURE IV

MURPHY-DURRELL
LETTER NAMES
TOTAL



RAW SCORE	FREQ.	RAW SCORE	FREQ.
0	135	23	2
1	40	24	0
2	26	25	4
3	23	26	3
4	21	27	2
5	27	28	1
6	25	29	1
7	18	30	2
8	21	31	3
9	25	32	2
10	47	33	0
11	31	34	1
12	14	35	2
13	18	36	2
14	13	37	1
15	15	38	1
16	9	39	0
17	9	40	1
18	5	41	2
19	4	42	6
20	9	43	3
21	4	44	3
22	2	45	1

N=584

Thurstone Pattern Copying and Identical Forms

At the time of this study, national norms for the Thurstone tests were not available. No comparisons can be made between local and national norms. An analysis of Figures V and VI, however, will indicate the heavy concentration of zero scores on both tests.

There were 142 zero scores on the Pattern Copying. The number of zero scores on the Identical Forms test is even more striking. Two hundred ninety-two, or exactly 50 percent of the children scored zero on this test.

The heavy concentration of scores within a single range does not allow for adequate discrimination. The 292 zero scores on the Identical Forms test seem to have the result of only discriminating between two groups, those with zero scores and those with a positive score. The predictive capability of the Thurstone Pattern Copying and Identical Forms Tests is not valid for the children in the project group.

Data Analyses

Analysis of data will follow the methodology of Bottenburg and Ward (1963). The complete model is attached as Appendix VII.

Question I

Will there be significant differences among the mean scores (Reading Readiness) of the three groups undergoing different methods of instruction?

For the analysis of Question I, the full linear model used was:

$$Y = a_1A + a_2B + a_3C + E$$

where, Y = the criterion (Metropolitan Reading Readiness scores; post-test):

TABLE III

A COMPARISON OF NATIONAL AND LOCAL MEANS AND STANDARD DEVIATIONS FOR THE MURPHY-DURRELL READING READINESS ANALYSIS

TEST	MEAN*		STANDARD DEVIATION	
	National	Local	National	Local
Phonemes	34.5	6.12	10.3	6.40
Letter Names Total	33.7	8.43	14.1	9.44

*Values reported are based on an N of 200 for the national sample and an N of 584 for the local sample.

SOURCE: _Murphy-Durrell Reading Readiness Analysis_, "Manual of Directions", (New York: Harcourt, Brace, and World, Inc., 1965), p.18.

TABLE IV

RANGE OF SCORES IN EACH OF THE FOUR QUARTILES

NATIONAL AND LOCAL

Quartile	Group Identification	PHONEMES National Raw Score Distribution	PHONEMES Local Raw Score Distribution	LETTER NAMES TOTAL National Raw Score Distribution	LETTER NAMES TOTAL Local Raw Score Distribution
4th(highest) quartile	A	44-48	0	47-52	0
3rd(upper-middle) quartile	B	37-43	1	35-46	22
2nd(lower-middle) quartile	B	29-36	8	21-34	27
1st(lowest) quartile	C	0-28	575*	0-20	535**

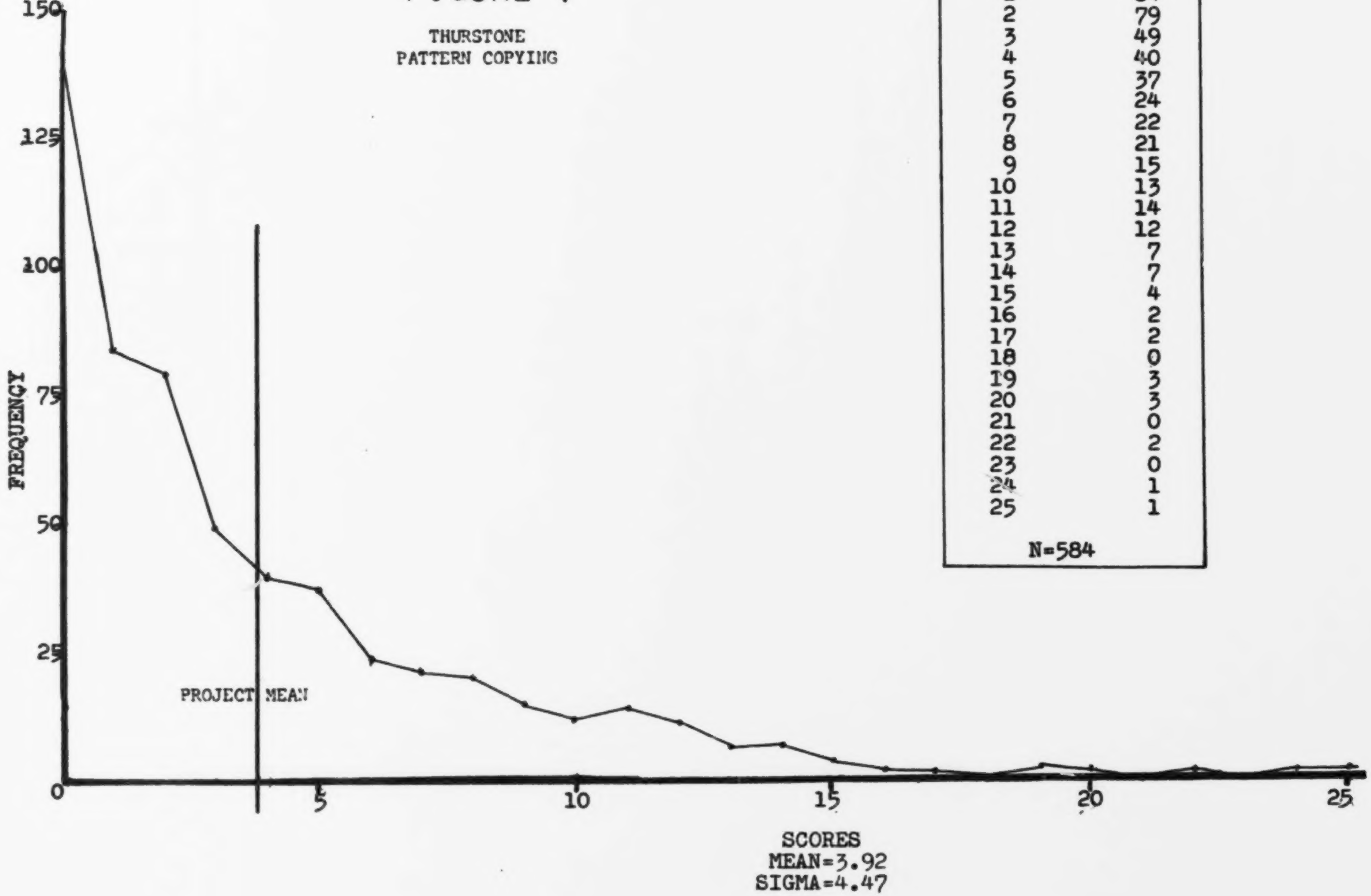
*includes 107 zero scores

**includes 135 zero scores

SOURCE: National Data--Murphy -Durrell Reading Readiness Analysis, Manual of Directions, (New York: Harcourt, Brace & World, Inc., 1965), p.16.

FIGURE V

THURSTONE
PATTERN COPYING

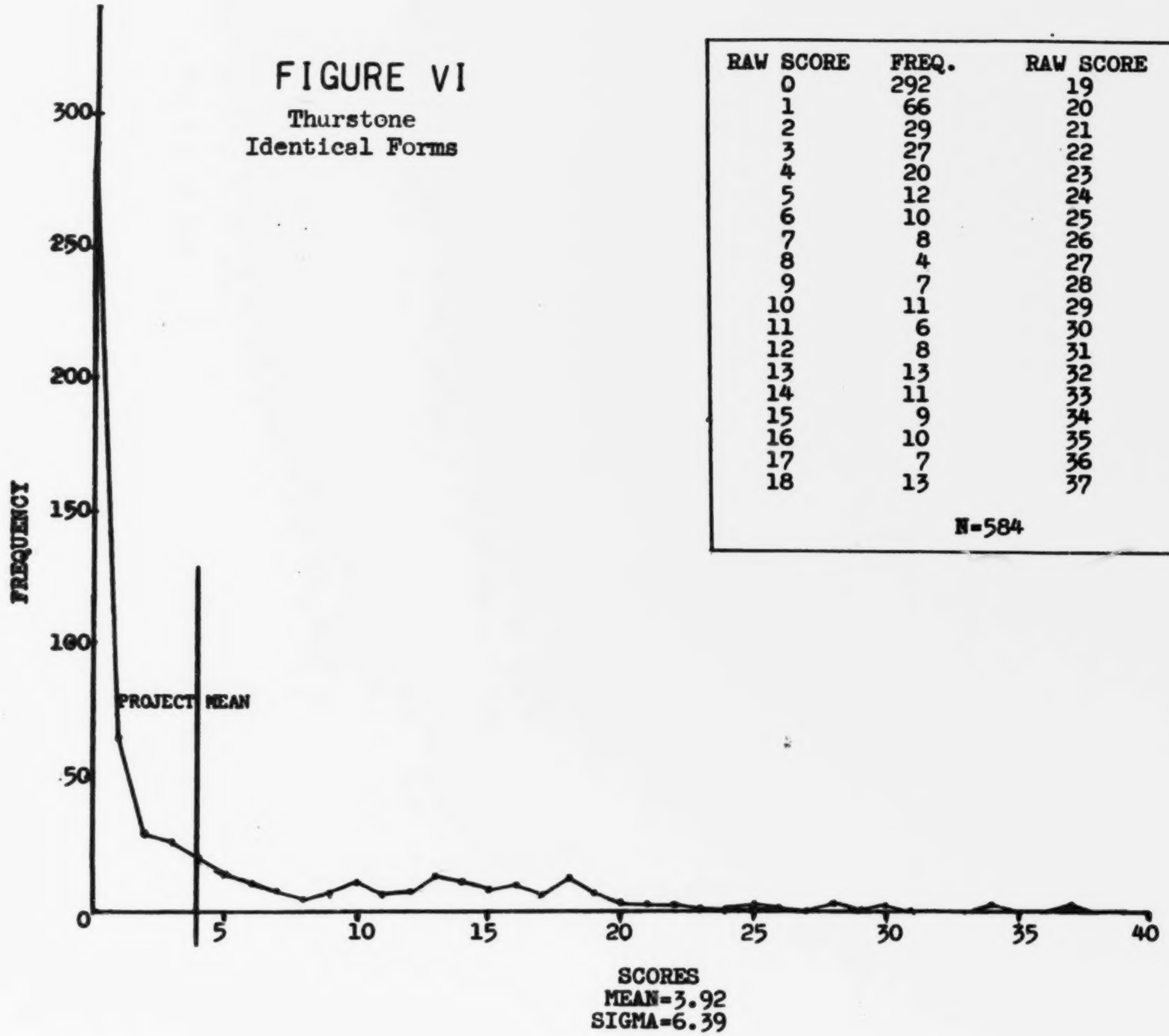


RAW SCORE	FREQ.
0	142
1	84
2	79
3	49
4	40
5	37
6	24
7	22
8	21
9	15
10	13
11	14
12	12
13	7
14	7
15	4
16	2
17	2
18	0
19	3
20	3
21	0
22	2
23	0
24	1
25	1

N=584

FIGURE VI

Thurstone
Identical Forms



RAW SCORE	FREQ.	RAW SCORE	FREQ.
0	292	19	6
1	66	20	3
2	29	21	2
3	27	22	2
4	20	23	1
5	12	24	0
6	10	25	1
7	8	26	1
8	4	27	0
9	7	28	2
10	11	29	0
11	6	30	1
12	8	31	0
13	13	32	0
14	11	33	0
15	9	34	1
16	10	35	0
17	7	36	0
18	13	37	1

N=584

A = 1 if subject is in Method A (OAE); zero otherwise

B = 1 if subject is in Method B (OAS); zero otherwise

C = 1 if subject is in Method C (NOA); zero otherwise

E = residual vector which has as elements, observed differences or discrepancies between corresponding observed and estimated values in Y

a_1, a_2, a_3 = unknown coefficients, or weights, associated with vectors A, B, C

By making mathematical restrictions on the above full linear model that coincide with the semantical null-hypothesis that there is no difference between the mean scores of the three groups, ($a_1 = a_2 = a_3$) the following restricted model was used:

$$Y = a_1U + G$$

where, Y = the criterion (Reading Readiness score)

U = unit vector associated with restriction $a_1 = a_2 = a_3$

G = residual vector resulting from use of the restricted linear combination to estimate observed values in vector Y

In this study, the F-ratio is used to compare the adequacy of the restricted model (null-hypothesis) with the full model as predictor of the criterion.

The F statistic to test the null-hypothesis that $a_1 = a_2 = a_3$ could be due to chance is

$$F = \frac{(R^2_f - R^2_r) / df_1}{(1 - R^2_f) / df_2}$$

where R^2_f = multiple R^2 for the full model

R^2_f = multiple R^2 for the restricted model

df_1 = degrees of freedom for the numerator; the number of linearly independent variables in the full model minus the number of linearly independent variables in the restricted model

df_2 = degrees of freedom for the denominator; the elements in Y minus the number of linearly independent variables in the full model.

The classroom was used as the sample unit. There were 28 classrooms on the project; 9 OAE, 10 OAS, and 9 NOA. The means for the three groups are:

Metropolitan Readiness, Form A
(National Norm 53.21)

Group	Means (Spring Testing)	N
OAE	48.19	9
OAS	49.86	10
NOA	54.86	9

T-tests were computed to determine if the difference between the means for the three groups were statistically significant. To test differences between means, procedures recommended by Edwards were used.[1] There were no significant differences between the three means at the .01, .05, or .10 levels:

1. NOA and OAS; mathematical difference between the means of these two groups is 5.00 points. With T equal to 1.268 and with 17 degrees of freedom (N-2), there is no significant

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[1] Allen S. Edwards. Statistical Methods for the Behavioral Sciences. Holt, Rinehart and Winston: New York, 1964. Pp. 254, 273-74.

difference between the means for the two groups.

2. NOA and OAE; the mathematical difference between the means of these two groups is 6.67 points. With T equal to 1.713 and with 16 degrees of freedom (N-2), the difference between the means is not significant.
3. OAS and OAE; the mathematical difference between the means of the OAS and OAE groups is 1.67 points. With T equal to .392 and with 17 degrees of freedom (N-2), the difference between the means is not significant.

Although there was no significant difference in the post-test means for these groups, there was a significant difference between the pre-test means:

Inter-American Test
of General Ability
(Fall Testing)

Group	Means	N
OAE	13.82	9
OAS	18.71	10
NOA	20.30	9

The following levels of significance were determined for the difference between means of the three groups:

1. NOA and OAS: T = .684, with 17 degrees of freedom (N-2), is not significant.
2. NOA and OAE: T = 2.794, with 16 degrees of freedom (N-2), is significant at the .02 level.

3. OAS and OAE: $T = 2.700$, with 17 degrees of freedom (N-2), is significant at the .02 level.

After a year's experience with the experimental methods (OAE and OAS), the significant differences between NOA and OAE, and OAS and OAE on the pre-test disappeared on the post-test. It should also be noted that the use of a readiness test as the criterion measure did not provide proper instrumentation for assessing oral language development which was the primary focus of the OAE and OAS treatments.

Question II

Will there be any difference between the readiness scores earned by boys and by girls when the pre-test scores (General Ability Test, September) are held constant?

For the analysis of Question II, the full linear model used was:

$$Y = b_1M + b_2F + b_3P^{(M)} + b_4P^{(F)} + E$$

where Y = the criterion (Metropolitan Reading Readiness scores; post-test)

$M = 1$ if subject is a boy; zero otherwise

$F = 1$ if subject is a girl; zero otherwise

$P^{(M)}$ = a continuous vector of pre-test scores for boys; zero otherwise

$P^{(F)}$ = a continuous vector of pre-test scores for girls; zero otherwise

E = residual vector which has as elements, observed differences or discrepancies between corresponding observed and estimated values in Y

b_1, b_2, b_3, b_4 = unknown coefficients, or weights, associated with vectors A, B, C

By making mathematical restrictions on the above full linear model that coincide with the semantical null-hypothesis that there is no difference between the readiness scores earned by boys and girls when pre-test scores are held constant, the following restricted model is first computed to test for interaction between the pre-test scores. In this initial restriction, that there is no difference between the pre-test scores of the boys or girls, the restriction used was:

$$b_3 = b_4$$

The restricted model used was:

$$Y = b_1M + b_2F + b_3P^{(M,F)} + G$$

where, Y = the criterion (Reading Readiness score)

M = 1 if subject is a boy; zero otherwise

F = 1 if subject is a girl; zero otherwise

$P(M,F)$ = a continuous vector of pre-test scores of boys and girls

G = residual vector resulting from use of the restricted linear combination to estimate observed values in vector Y

The F-ratio formula used throughout Question II is the same as in Question I:

$$F = \frac{(R^2_f - R^2_r) / df_1}{(1 - R^2_f) / df_2}$$

The results of the computation using the restricted model indicated interaction between the scores on the post-test for boys and girls when controlling for pre-test (General Ability; see Figure VII). The F-ratio associated with the full and restricted models was 69.014 ($P < .01$) with 1 degree of freedom in the numerator and 52 degrees of freedom in the denominator.[1] Under these conditions ($P < .01$) it is not permissable to test the null-hypothesis that there was no significant difference in the post-test scores for boys and girls when holding pre-test constant ($b_3 = b_4$). No further analyses using this particular null hypothesis were attempted.

An analysis of variance on pre- and post-test scores for boys and girls shows no significant differences at any level of significance.

Metropolitan Readiness, Form A Post-Test (Spring)			Inter-American General Ability Pre-Test (Fall)		
	N	Mean		N	Mean
Boys	316	49.91	Boys	316	17.77
Girls	268	51.53	Girls	268	18.20
		T = .650 (NS)			T = .262 (NS)

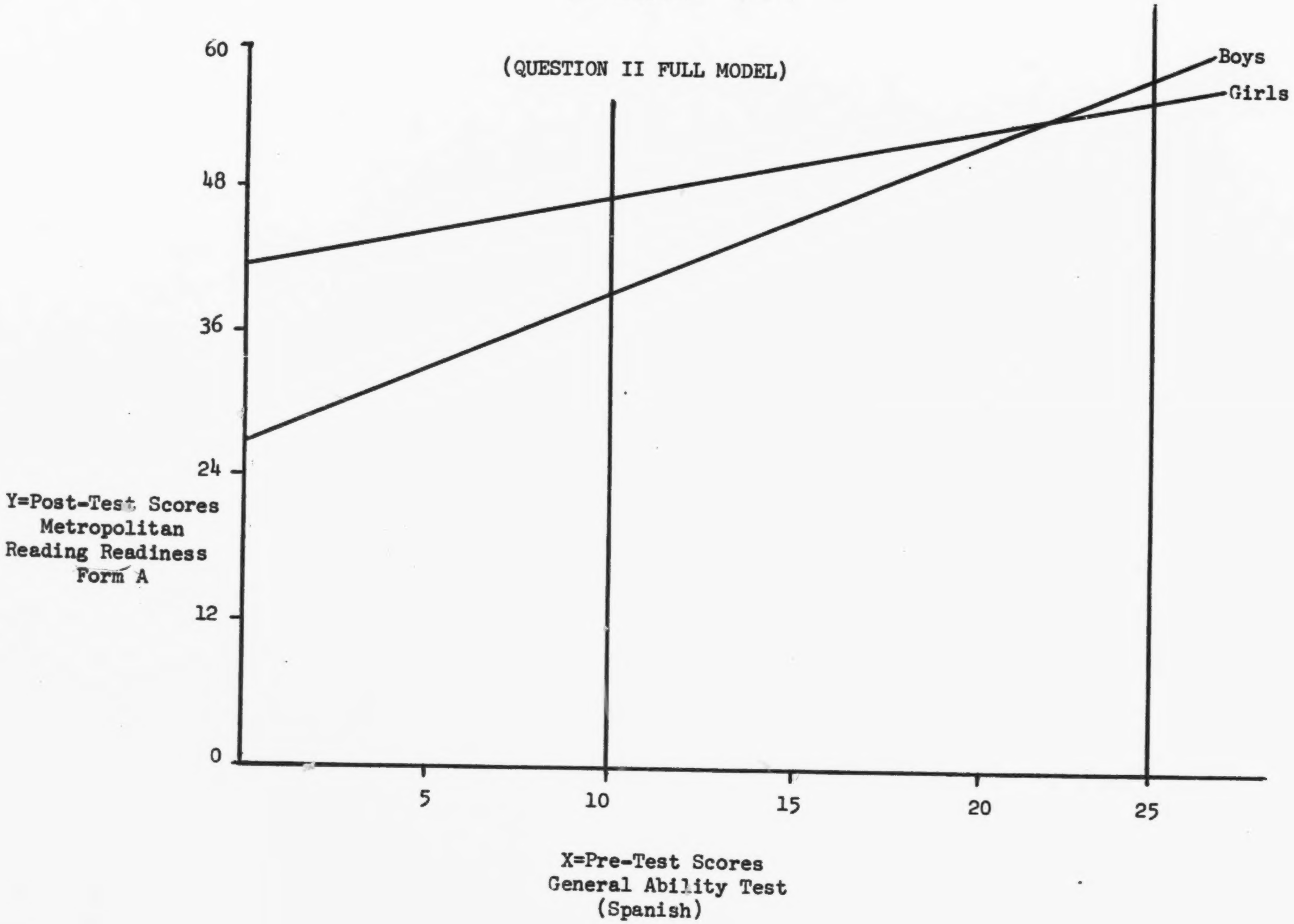
A descriptive analysis of boys and girls within the classroom sample unit for whom complete data were available, shows a mean of 11.28 boys per class and 9.57 girls. The number of boys with complete data in the 28 classrooms ranges from 5 in one class to 16 in each of two classes.

---

[1] Degrees of freedom in the numerator are determined by subtracting the number of linearly independent vectors in the restricted model from the number of linearly independent vectors in the full model. Degrees of freedom for the denominator are determined by subtracting the number of linearly independent vectors in the full model from elements (N) in the criterion (Y).

FIGURE VII

(QUESTION II FULL MODEL)



The breakdown by treatments for boys is as follows:

OAE = 101
OAS = 118
NOA = 97

The range in the number of girls per class in the 28 classrooms for whom complete data are available is from 3 to 15. The teacher with 3 girls had 9 boys, and the teacher with 15 girls had 11 boys. By method the breakdown by treatments for girls is as follows:

OAE = 96
OAS = 82
NOA = 90

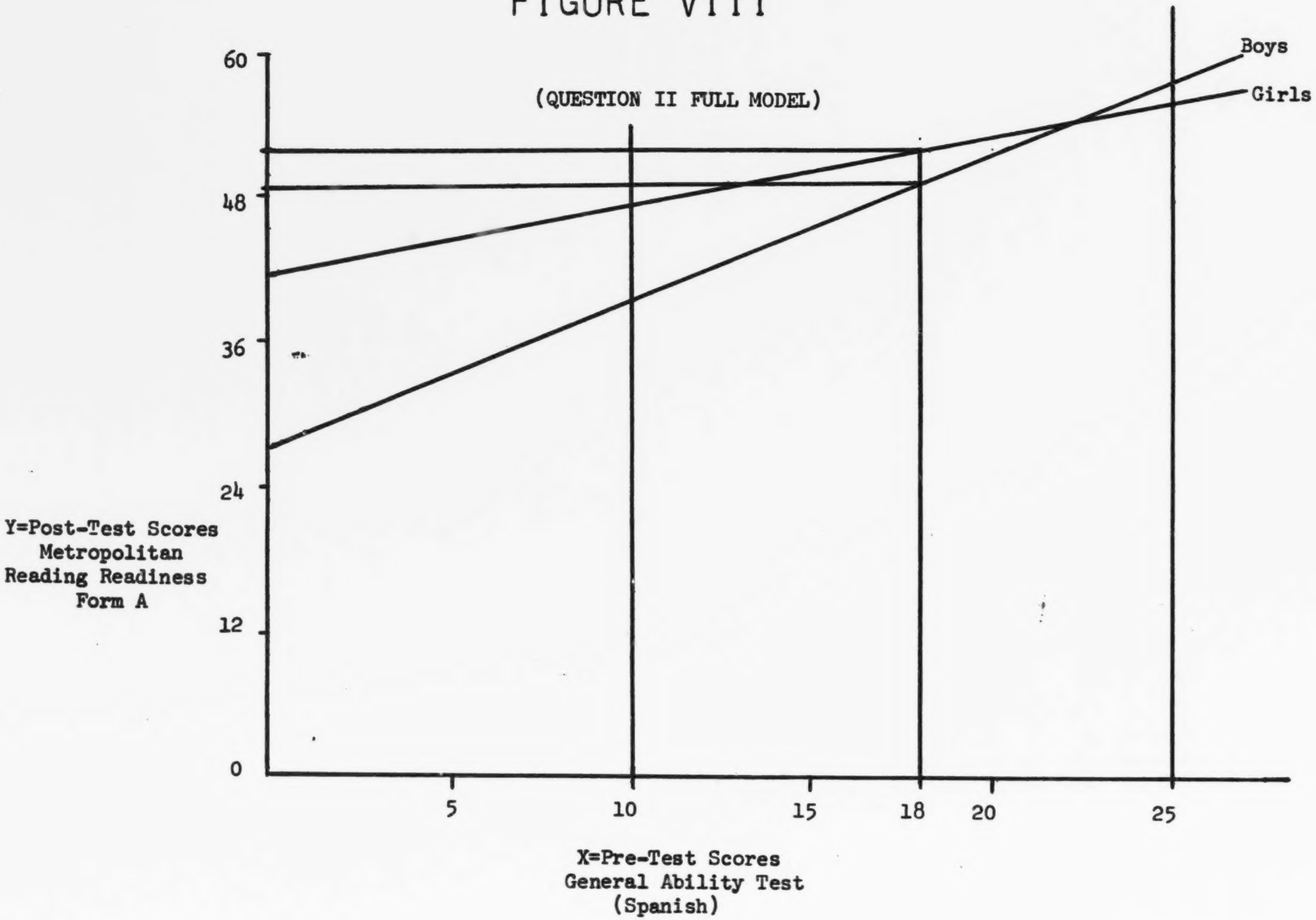
Of interest is the range of classroom means on the post-test (Reading Readiness) for boys and girls. The spread of the means for boys is from 25.67 to 67.38, or a significant difference at the .01 level (T = 9.062). The differences between low and high means for boys within groups, using classroom as the sample unit is as follows:

Group	Low Mean	N	High Mean	N	Difference	T	Level of Significance
OAE	25.67	15	55.44	9	29.77	3.906	.01
OAS	29.78	9	64.44	16	34.66	5.825	.01
NOA	32.40	5	67.38	8	34.98	5.851	.01

The means for girls show a range of 34.20 to 64.23 which is a significant difference at the .01 level (T = 6.204). The difference between low and high means for girls within groups using classroom as the sample unit is as follows:

Group	Low Mean	N	High Mean	N	Difference	T	Level of Significance
OAE	37.18	11	59.20	10	22.02	3.383	.01
OAS	34.20	10	62.00	9	27.80	4.877	.01
NOA	42.22	9	64.23	13	22.01	1.818	.10

FIGURE VIII


(QUESTION II FULL MODEL)
Boys
Girls
60
48
36
24
12
0
5
10
15
18
20
25
Y=Post-Test Scores
Metropolitan
Reading Readiness
Form A
X=Pre-Test Scores
General Ability Test
(Spanish)

Although the analysis indicated interaction and further analyses were not attempted (i.e., forcing the regression lines into a parallel configuration), it is possible to speculate on where individuals with a certain pre-test score would score. The range of interest lies between 10-25 score points on the Y axis, or approximately +1 and -1 standard deviations from the mean of 18 (rounded from 17.9). If a boy and a girl scored at approximately the mean, their post-test scores would probably differ by 3.17 points with the girl scoring higher (see Figure VIII). At the bottom of the range of interest, 10 score points, a girl would probably score higher than a boy. At the top of the range of interest, 25 score points, a boy would probably score higher than a girl.

Question III

Will there be any difference among the readiness scores of the three different treatment groups when General Ability scores (September) are held constant?

For the analysis of Question III the full linear model used was:

$$Y = c_1A + c_2B + c_3C + c_4P^{(A)} + c_5P^{(B)} + c_6P^{(C)} + E$$

where Y = the criterion (Metropolitan Reading Readiness scores; post-test)

$A = 1$ if subject is in Method A (OAE); zero otherwise

$B = 1$ if subject is in Method B (OAS); zero otherwise

$C = 1$ if subject is in Method C (NOA); zero otherwise

$P^{(A)}$ = a continuous vector of General Ability scores (pre-test) associated with membership in group OAE

$P^{(B)}$ = a continuous vector of General Ability scores (pre-test) associated with membership in group OAS

$P^{(C)}$ = a continuous vector of General Ability scores (pre-test) associated with membership in NOA group

E = residual vector which has as elements, observed differences or discrepancies between corresponding observed and estimated values in Y

$c_1, c_2, c_3, c_4, c_5, c_6$ = unknown coefficients, or weights, associated with Vectors A, B, C, $P^{(A)}, P^{(B)}, P^{(C)}$

As with Question II, the first step was to determine if there was any interaction among the three groups based on pre-test scores, a concomitant variable. To test for interaction, the following restricted model used was:

$$Y = c_1A + c_2B + c_3C + c_4P^{(A,\ B,\ C)} + G$$

where Y, A, B, C, are the same as in the full model, and

$P^{(A,\ B,\ C)}$ = a continuous vector of all pre-test scores corresponding to methods A (OAE), B(OAS), C (NOA)

C = residual vector resulting from use of the restricted linear combination to estimate observed values in vector Y

The null-hypothesis associated with this restriction is that there is no difference among the post-test scores associated with pre-test scores for all three groups ($c_4 = c_5 = c_6$).

From computation of the F-ratio (F-ratio = 2.249; P = .13) associated with the full and restricted models, it was determined that interaction was present among the post-test scores for the three groups (NOA, OAS, OAE) when controlling for pre-test (see Figure IX). Because of this interaction, no attempt was made to test the null-hypothesis that there was no significant difference among the post-test scores of the three groups when controlling for pre-test.

In analyzing the classroom means on the post-test, a low mean of 30.52 and a high mean of 64.76 were recorded, or a significant difference at the .01 level (T = 9.155). The differences between means within groups (OAE, OAS, NOA), using the class as the sample unit are as follows:

Group	Low Mean	N	High Mean	N	Difference	T	Level of Significance
OAE	30.52	27	54.77	22	24.25	6.137	.01
OAS	34.71	14	63.56	25	28.85	5.961	.01
NOA	38.71	14	64.76	28	26.05	5.989	.01

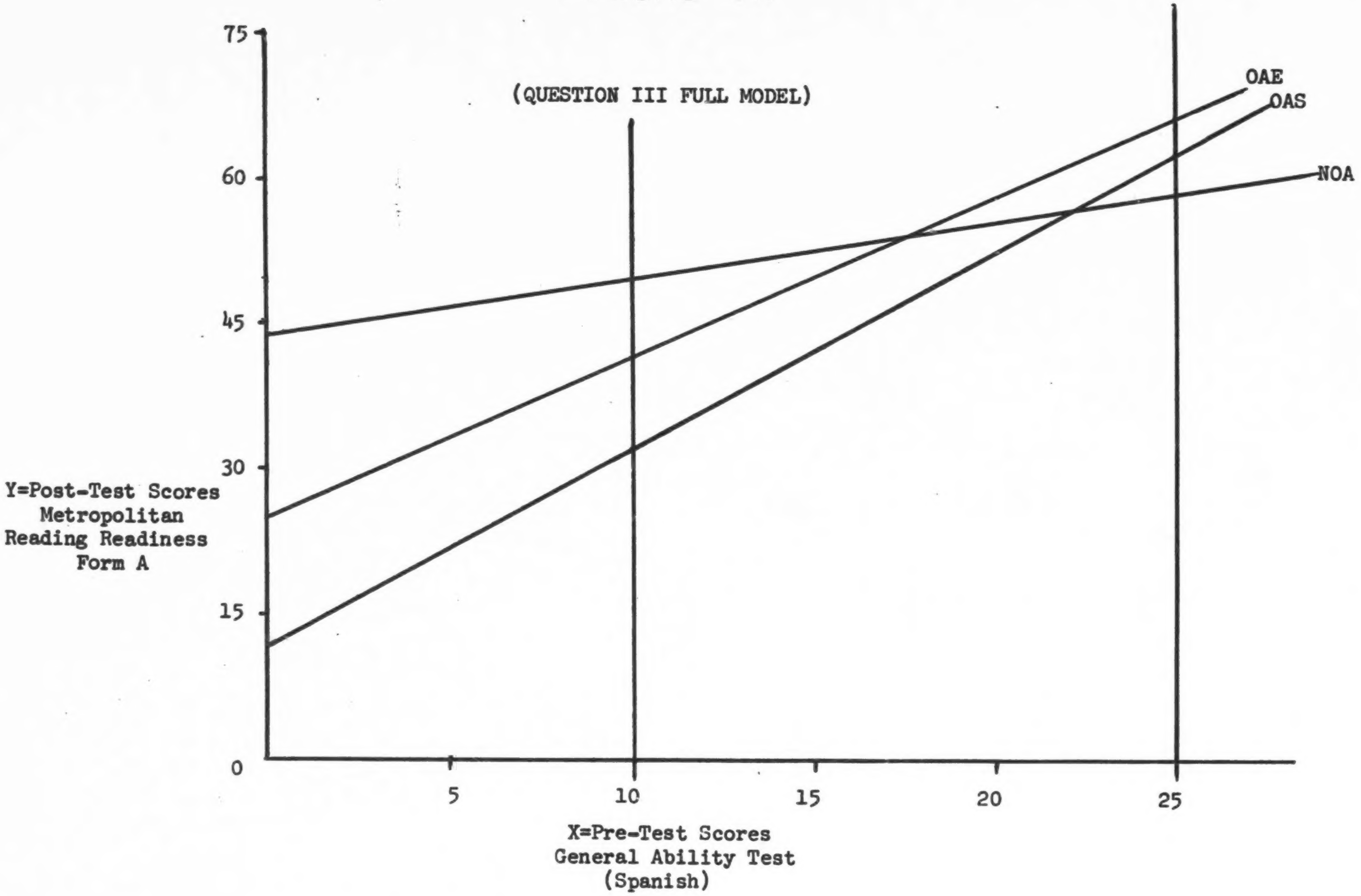
Thus, within the groups there is a significant difference between high and low means on the basis of the post-test, although this significance is not found between methods.

At the lower end of the range of interest on the pre-test (10 score points), a member of the NOA group could be expected to score highest on the post-test. However, at the higher range of interest (25 score points) on the pre-test, a member of the OAE group could beexpected to score higher than the other two groups. A member of the NOA group would score lower on the post-test than members of OAE and OAS scoring 25 score points on the pre-test.

Conjectures Pertaining to Results

An obvious generalization arising from the scores obtained on the Metropolitan Readiness Test (spring testing) would indicate that the

FIGURE IX



(QUESTION III FULL MODEL)

population used on this project was about one year retarded upon entering first grade when compared with the national mean for children entering first grade of 53.21.* The project mean (all three treatments combined) computed from a test administered in May, was 51.13. The mean for the project group on the September administration of the Metropolitan was 18.34, or 34.87 less than the national norm. The post-test mean for all groups combined of 51.13 is still 2.08 points less than the national norm administered at the opening of school in September. Nevertheless, it cannot be safely generalized at this time that retention will solve the problem. Because the study is longitudinal in nature, future analyses may show a more positive reaction between methods. Also, since the study is longitudinal in nature, as other independent variables such as socio-economic factors, IQ, and age are identified and controlled, analyses may determine their possible influence on achievement.

The instrument used for securing criterion scores was designed to measure reading readiness for an English-speaking population which was normally expected to pursue a basal reading program. The OAE and OAS group treatments concentrated upon oral language development while the NOA groups proceeded as "usual" with the readiness and basal program. The Metropolitan is obviously not a valid instrument for measuring the effects of intensive oral language instruction for the OAE and OAS groups. No usable instrument was available to assess levels of oral language development for the project population in either English or Spanish.

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*Metropolitan Readiness, Form A, "Manual," p. 12 and 14.

Therefore, it is surprising that the differences associated with children receiving NOA, OAE, and OAS treatments were not as significant when based on a comparison which involved a measure other than one which measured oral language development, when oral language was the prime factor in the OAE and OAS treatments.

Considering the lack of a valid measuring instrument for two of the treatments (OAE and OAS) and the fact that the control group (NOA) continued in a regular reading readiness program which was not part of the two experimental groups' curriculum, the higher NOA mean on the criterion is not surprising. What is surprising is that the NOA's expected value was not significantly higher when taking into account that the Metropolitan Readiness Test was the criterion; and further, when taking into account the fact that the NOA scores on the General Ability Test were significantly higher than the OAE treatment.

CHAPTER FOUR

LIMITATIONS, CONCLUSIONS, AND RECOMMENDATIONS

Limitations of original research design and situational factors

The limitation of instrumentation, discussed below, pertains primarily to the research design. The remaining factors, seven in all, were recognized from the beginning of the project, although not always to the degree of impact each would have upon pupil learning as well as upon the validity of available instrumentation.

(1) Instrumentation: The inappropriateness of the tests used by the Cooperative Research First-Grade Reading Projects in terms of the San Antonio, Texas, Spanish-speaking population is graphically illustrated in the analyses of test score distributions which appear in Chapter Three. About the only meaningful analyses that could be made of test results which would fit the instrumentation set by the twenty-seven project directors was the Metropolitan Readiness Test, Form A, administered in the spring of 1964. The Goodenough-Harris Drawing Test was administered during the fall testing. Sufficient doubt existed concerning the validity of this test for estimating the intelligence level of Spanish speakers that the Inter-American Test of General Ability (Spanish) was used. The Inter-American General Ability scores were held constant in the analysis for differences among groups and sex differences as measured by the criterion measure, Metropolitan Readiness Test, Form A.

The primary foci of the study, i.e., the development of oral language, cognition, and experiential backgrounds as preludes to reading, are still largely unmeasured.

(2) Socio-economic factors: The majority of pupils in the project population, by and large, may be classified as among the most disadvantaged Spanish-speaking school beginners in the Southwest. Teachers participating in the project had to deal daily with pupils who were: (1) undernourished or just plain hungry; (2) inadequately clothed; (3) unaware of many desirable personal health practices; (4) inexperienced in the use of modern plumbing; (5) products of broken homes; (6) largely limited in experiential background to the home and immediate neighborhood; (7) suffering from insufficient rest and/or low energy levels; and (8) subject to cultural sanctions which affected all learning.

(3) Self-concept levels: A major characteristic of the disadvantaged child is a negative self-image. In the case of disadvantaged Spanish-speaking school beginners, they have been told for at least six years, implicitly or explicitly, that they are inferior to the Anglo. In addition to the problems faced by disadvantaged white and Negro children, the disadvantaged Spanish-speaking first grader has the additional handicap of speaking a language other than that spoken by the teacher and which is generally unacceptable insofar as school activities are concerned.

(4) Language factors: Underdeveloped language may be broadly classified into the following types:

(a) Verbal destitution--actually possessing very little language of any kind; communicating basic needs by signs and incomplete utterances.

(b) Non-standard forms--fluent in language of a kind not acceptable by school standards. Individuals with a substandard language may be able to make themselves understood, but their speech is full of gross errors and oddities. Such non-standard forms carry a social stigma in addition to the inappropriateness for academic learning.

(c) Lacunary language--underdeveloped language due to unconceptualized experiences. In certain aspects of experience valued by the schools, these children may have had no occasion to verbalize meanings and are consequently impoverished in language.

The pupil population of the project suffers from one or a combination of the foregoing types of underdeveloped language in their native Spanish. In addition, almost every pupil could be considered non-English speaking when he entered school. Rather than being classified as a bilingual, a more appropriate term is probably "a-lingual."

(5) Teacher command of audio-lingual techniques: Every teacher in the OAE and OAS treatments received instruction in the use of the science-based materials and the audio-lingual techniques to be used in teaching either Spanish or English, as appropriate. This necessitated an intensive pre-school workshop session as well as extensive consultant services and continuing in-service operations throughout the 1964-65 year. Teacher variation in terms of the effective use of audio-lingual techniques in May as compared with September were, of course, not unexpected and constitute part of the total teacher variable. Whether or not bilingual teachers have an inherent advantage over monolingual teachers in command of audio-lingual techniques is a matter for conjecture at this point.

(6) Attitudes: A galaxy of attitudinal interactions between teachers and pupils was observed, but neither the instrumentation nor the time was available to begin a penetration of this crucial area. The educational debilitation of a child abandoned by his family, either physically or

psychologically or both, and attending school for the first time, becomes almost total when he faces an additional rejection by his teacher. Fortunately, rejections such as the latter were infrequent and when such did occur, they generally took the form of demanding that the Spanish-speaking child conform to Anglo middle-class expectations and culture.

(7) Contrastive linguistic analyses: From analyses of the cartridge tapes recorded during the development of an instrument for assessing oral language, evidence indicated that language problems identified by studies using adult Spanish-speaking populations may not always hold true for school beginners. If more detailed contrastive analyses confirm the foregoing indications, modifications will have to be made in the linguistic build-ups. A careful study of language patterns existing among members of the project population has yet to be made.

Findings and conclusions

Upon examination of limitations discussed in the preceding sections, especially the highly frustrating limitation of instrumentation, the conclusions to be made at this point are also limited. On the basis of the analyses and keeping in mind the limitations, the following conclusions are made:

(1) When the analysis of criterion scores was made using the class as a sample unit (N = 28) and considering no concomitant variables, differences between post-test means were not significant.

(2) By using an analysis of variance between post-test scores for boys and girls no significance was found between the means (T = .650). Because of the interaction between the post-test scores for boys and girls when

holding pre-test scores constant, no further analysis could be conducted.

(3) In testing for interaction among the three groups (NOA, OAS, and OAE), using the null-hypothesis that there was no difference in post-test scores when holding pre-test scores constant, the significance probability was found to be at the .13 level. No further analyses of the difference among the groups on post-test scores could be attempted without great loss in predictive efficiency.

(4) Using the class as the sample unit, statistically significance differences were found between the highest and lowest means for (a) boys in the entire project; (b) boys in each of the three treatments (OAE, OAS, NOA); (c) girls in the entire project; and (d) girls in each of the three treatments. It is not clear whether this condition may be due to teacher variables or to the existence of atypical classes. Certainly the wide ranges between class means according to sex raise serious questions concerning the validity of using the pupil as the sample unit.

(5) The large number of zero scores attained on the instruments used in the pre-testing clearly demonstrated the inappropriateness of most available standardized tests for the project population.

It is too early to arrive at conclusions concerning promotion or retention of the project population in terms of spring scores on the Metropolitan Readiness Test. Further conclusions will have to await testing at the end of the second and succeeding years, hopefully with new and appropriate instrumentation.

Implications

Basically two types of implications can be derived from the research which has been described above. One type derives directly from the design, findings, and conclusions of the research itself. The second type derives from the systematic observations by the research team of the environment in which this research was conducted. The two types are described below:

(1) Implications of the design, findings, and conclusions: (a) The need for the development of suitable measures for assessing the capabilities; experiential background; cognitive functioning, including range and usability of concepts and cognitive style; and language level of Spanish-speaking disadvantaged children is, perhaps, the most significant implication that can be drawn from both the findings and conclusions of this research. The results of this research make it painfully clear that the types of measures used to estimate the intelligence and readiness for reading of the children participating in this research were, for the most part, almost hopelessly inappropriate. Despite the number of tests used in this research (which were probably appropriate to other first grade studies), the kinds of abilities and knowledge measured for the San Antonio population were narrow and, in the opinion of the research staff, peripheral to the central issues involved, namely,the two barriers of disadvantagedness and general language development. That there was a lack of congruence between the demands of the measures used and the "life-experiences" of the children cannot be disputed.

[1] This research clearly suggests the use for a measure which could assess with a reasonable degree of accuracy the range, depth, relevance and usability of experiential background of disadvantaged children for the demands, skills and attitudes necessary for academic learning.

[2] Another type of measure which would be of great value would be one that would assess the level of development of various concepts, e.g., color, number, size, and critical relationships required for beginning academic learning, e.g., same-different and sequence of events. As a part of such a measure, a section would be of great value which would involve the types of reasoning approaches required most by the beginning tasks of academic learning.

[3] Another measure critically needed is one relating to language development, namely, the ability to hear and produce the sound system of a language and an estimate of expressive fluency or communication. Such a measure tied in, perhaps, with the cognitive aspects would be extremely helpful.

In the administration and evaluation of the tests given as a part of this research, it was often impossible to determine the extent to which the failure of the subjects to handle these tasks was the result of the language barrier or the disadvantagedness barrier or both. The poor results secured from the Inter-American Tests of General Ability, administered in Spanish, suggest that both were involved.

(b) The program of sequential learning experiences and the conceptual framework from which these learning experiences emanated (see Appendix II) should have considerable significance not only for Spanish-speaking disadvantaged children in general but for other groups of disadvantaged children as well. The conceptual framework, undergirding the program actually taught in the classroom, drew upon and systematized the insights of many disciplines into an operational model for the design of specific learning experiences. Among the disciplines used were: science, cognition, linguistics and foreign language teaching, child development, learning theory, psychology of educational disadvantagedness, and cultural anthropology. The subject-matter of the program, science, is of particular interest since it is not the usual content around which most reading readiness programs are centered. Both the enthusiastic response of the subjects with whom this program was used and the fact that every concept and relationship included in the program could be concretely illustrated in a number of ways suggest the probable merit of science content using audio-lingual techniques as a means of not only developing the kinds of abilities associated with beginning reading but also of those associated with successful academic learning. That is, the audio-lingual technique might conceivably be used to provide a well-structured bridge across which other kinds of disadvantaged children might travel with security, children who speak a type of English other than that of the school and academia.

(2) Implications from observations made by the research staff: (a) The kinds of observations made of the Spanish-surname children serving as the subjects of this research during the course of the year can be grouped into two general categories. One category, easily recognizable, was, of course, the language barrier. Regardless of the level of language development which a child possessed upon entering school, he spoke Spanish, which is usually considered as a symbol of low social status. The school, in totally ignoring Spanish, cuts off its major avenue of communication with these children. In ignoring Spanish, it also rejects much of what the child is.

(b) A second category, containing two facets, was disadvantagedness. One of these facets consisted of the spectrum of basic abilities and knowledge, or experiential background associated with beginning academic/school learning and reading, *e.g.*, auditory and visual discrimination, simply classifying, lack of information about objects and events supposedly familiar to children. The second facet consisted of observations related to a critical intangible, namely, the development of a sense of personal identity or concept of self. The style of responding reflected by these children toward the school environment could be characterized as generally apathetic, fearful, bewildered, and/or just passive. Most of these children revealed a marked lack of self-confidence in handling various kinds of seemingly simple tasks, *e.g.*, cutting with scissors, copying figures, seeing gross differences among objects. One of the most striking characteristics about these children was their general insensitivity to the world of school around them. The kinds of observations noted in these categories presented a discouraging setting in which a child might acquire positive feelings of self-esteem and a continuing sense of personal identity. The science-based program and its techniques appeared to be making a direct assault upon the categories of language and the first facet of disadvantagedness; namely, the abilities and knowledge specifically needed for reading and academic learning. However, only indirectly did this program assault the second facet of disadvantagedness, namely, the concept of self. The consideration of these observations suggests the need for another kind of program which would directly provide the kinds of learning experiences and language development organized around the components of the self-concept. Required for a program of this type would be an analysis of what is involved in the self-concept and then the planning and sequencing of specific kinds of experiences designed to enhance its development. If accurately conceived and adequately implemented, such a program might contribute immeasurably not only to the success of these children in school but in later life as well.

(c) The extensive consultative services and in-service program for teachers required to implement the experimental program of this research clearly suggest the need for special pre-degree and post-degree practicums and in-service programs specifically concerned with teaching the Spanish-speaking disadvantaged child. Among the aspects which such practicums and programs should focus upon are:

[1] the significance and components of general language development techniques for developing language;

[2] an understanding of the reading process and techniques for developing it in contexts and ways appropriate to disadvantaged children--and not just a slavish adherence to the manuals of the basal readers;

[3] an understanding of the cognitive processes reflected in oral and visual language structures;

[4] an understanding of the kinds of experiences which enhance a child as a human being and the ability to design and apply such experiences; and

[5] a grasp of the strengths and weaknesses in both the Anglo-American and Mexican-American cultures and ways to give the children insights into both which will bring about workable and valuable syntheses rather than continuing conflicts. First formal steps were made in this direction in the summer of 1965 by an NDEA Institute for Disadvantaged Spanish-Speaking Children, held at The University of Texas, and by the in-service training program provided for the project teachers by the research staff. A pilot program in teacher education at The University of Texas, now in progress, is specifically designed for teachers of Spanish-speaking disadvantaged elementary school children.

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APPENDIX I

THE UNIVERSITY OF TEXAS
DEPARTMENT OF CURRICULUM AND INSTRUCTION

Basic Criteria for Programs for Disadvantaged Children

1. A systematic program for the direct oral development of a standard dialect of American English must be provided prior to formal instruction in reading and writing. Language to be developed from concrete experiences.

2. The program should provide a graded sequence of experiences which develop basic cognitive abilities (intellectual skills) necessary for subsequent learning and academic achievement.

3. Such a program should not discriminate subtly, e.g., psychologically, socially, or directly, e.g., through a choice of language or physical traits presented in such a way as to indicate superiority of one language or culture over another. The program, then, should present content which is culture fair, appropriate to child development and not favoring a particular set of values or social stratum in society.

4. Values, customs, and goals which are commonly agreed upon are essential to a society. However, content of the program should be realistic and present those values which are universal and typical of any civilized individual and group.

5. All concrete experiences and accompanying language development should emphasize the emerging self-concept, designed for the building of personal identity and self-worth as an individual.

6. Each child must be given the opportunity to demonstrate and apply his learning in a variety of situations, and use this learning to acquire and relate new knowledge and skills.

7. Specific training must be given to help the child:

    a. perceive selectively (or tune out irrelevant noises and distractions) for the task at hand
    b. (1) organize and classify his experience
        (2) generalize his experiences
        (3) understand various abstract relationships, e.g., cause and effect relationship and the concepts of time and space
    c. verbalize and communicate the above using acceptable speech

8. The program should systematically develop, refine, and reinforce experiences, concepts, broad cognitive patterns (thinking skills) and language structures all interlocked into a planned program which has depth and feeds directly into the formal learning necessary for success in school.

9. Specialized techniques for teaching disadvantaged children are essential. Oral language development through using audio-lingual techniques and concrete experiences, sequenced around a strong program for developing the intellect, requires selected teachers trained for such a program.

10. Frequent evaluations of learnings based on:

    a. types of thinking skills being developed
    b. understandings and applications of concepts and terms being acquired
    c. language structures being acquired

APPENDIX II

Tentative Conceptualization of Curriculum for Educationally Disadvantaged Spanish-Speaking Children

A. Stemmler, 1965

Curriculum Theory as it Relates to:

The Two Cultures

Anglo-American Culture

Spanish-American Culture

1. Conflict? - -
2. Assimilation to Anglo? Spanish? + -
3. Synthesis? + +

Values
Life Style
Social Class
Religion
Education

The broad context in and from which the curriculum will be developed and implemented.

(Broadest Level of Decision)

1. The Philosophy of Education

The Educationally Disadvantaged Spanish-Speaking Chil

(The Educationally Disadvantaged Spanish-Speaking Child is generally dropped into the Anglo-oriented middle-class cultural setting without any special provision being made.)

The target population for curriculum development.

1. Characteristics
2. Needs
3. Representative of Spanish-American culture; sometimes partially assimilated.
4. Implications for academic learning.

(Another level of decision-making)

2. View of the child

Key Areas Selected for Curriculum and Design of Program

1. Psychology of the Disadvantaged Child as it pertains to education and broader social context. This represents the abstracting out of salient characteristics of the disadvantaged child for academic learning.

(Continued)

2. View of subject-matter

4. Role of teacher

Key Areas...., continued

2. Cognition

   a. Styles of thinking
      - (1) Abstract
      - (2) Concrete

   b. Content of thinking in the two types - concepts/percepts

   c. Methods of reasoning
      - (1) Inductive
      - (2) Deductive
      - (3) Analogical
        The formation and use of concepts

   d. Dimensions of thinking
      - (1) Imaginative
      - (2) Realistic/Intellective

3. Teacher Attitude and Education

4. Language

   a. Communication
      - (1) Oral-aural
        Receptive (listening)
        Expressive (speaking)
      - (2) Visual
        Receptive (reading)
        Expressive (writing)

   b. Linguistics

   c. Reflection of cognitive operations

   d. Spanish versus English

5. Content Fields

   a. Literature) Filtered through
   b. Social Studies) Listening
   c. Science) Speaking
   d. Mathematics) Reading
   e. Fine Arts) Writing
   f. Physical Education)

6. Learning Principles

(Decision-making)

Objectives for the Spanish-Speaking Child

1. Indirect Sources - all that has preceded
2. Sources most directly from the five key areas noted
3. Type
   a. Child-centered
   b. Behavior plus content
   c. General objectives with supporting subobjectives
   d. Planning
   e. Evaluation

(Decision-making)

5. Role and function of objectives
   a. Sources -
      Subject matter
      Child development
      Learning
      Culture
   b. Focus -
      Content-centered
      Behavior-centered
      Content and behavior centered
      Teacher-centered
      Child-centered
   c. Relationship to sequence of and supporting learning experiences.
   d. Relationship to Evaluation.

Sequential Progression of Learning Experiences for the Spanish-Speaking Educationally Disadvantaged Child

The learning experience consisting of transactions/interactions occurring within the school setting: child with teacher; child with child; child with objects.

1. Techniques
2. Materials for subject-matter areas
3. Language
4. Specific activities
5. Follow-up
6. Evaluation

(Decision making)

Illustrations of this Decision Making Process in Action and the Influence of the Preceding Aspects Considered

1. Science-mathematics based materials
   Cognition < patterns - concepts
   a. Inductive → deductive
      Concrete/perceptual to abstract/conceptual
      Combination → analogical
   b. Language patterns
      Linguistics
      Communication
   c. Structuring (research on imposition of freedom)
   d. Content

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APPENDIX I

THE UNIVERSITY OF TEXAS
DEPARTMENT OF CURRICULUM AND INSTRUCTION

Basic Criteria for Programs for Disadvantaged Children

1. A systematic program for the direct oral development of a standard dialect of American English must be provided prior to formal instruction in reading and writing. Language to be developed from concrete experiences.

2. The program should provide a graded sequence of experiences which develop basic cognitive abilities (intellectual skills) necessary for subsequent learning and academic achievement.

3. Such a program should not discriminate subtly, e.g., psychologically, socially, or directly, e.g., through a choice of language or physical traits presented in such a way as to indicate superiority of one language or culture over another. The program, then, should present content which is culture fair, appropriate to child development and not favoring a particular set of values or social stratum in society.

4. Values, customs, and goals which are commonly agreed upon are essential to a society. However, content of the program should be realistic and present those values which are universal and typical of any civilized individual and group.

5. All concrete experiences and accompanying language development should emphasize the emerging self-concept, designed for the building of personal identity and self-worth as an individual.

6. Each child must be given the opportunity to demonstrate and apply his learning in a variety of situations, and use this learning to acquire and relate new knowledge and skills.

7. Specific training must be given to help the child:

   a. perceive selectively (or tune out irrelevant noises and distractions) for the task at hand
   b. (1) organize and classify his experience
      (2) generalize his experiences
      (3) understand various abstract relationships, e.g., cause and effect relationship and the concepts of time and space
   c. verbalize and communicate the above using acceptable speech

8. The program should systematically develop, refine, and reinforce experiences, concepts, broad cognitive patterns (thinking skills) and language structures all interlocked into a planned program which has depth and feeds directly into the formal learning necessary for success in school.

9. Specialized techniques for teaching disadvantaged children are essential. Oral language development through using audio-lingual techniques and concrete experiences, sequenced around a strong program for developing the intellect, requires selected teachers trained for such a program.

10. Frequent evaluations of learnings based on:

    a. types of thinking skills being developed
    b. understandings and applications of concepts and terms being acquired
    c. language structures being acquired

APPENDIX II

Tentative Conceptualization of Curriculum for Educationally Disadvantaged Spanish-Speaking Children

A. Stemmler, 1965

The Two Cultures

Anglo-American Culture

Spanish-American Culture

1. Conflict? - -
2. Assimilation to Anglo? Spanish? + -
3. Synthesis? + +

Values
Life Style
Social Class
Religion
Education

The broad context in and from which the curriculum will be developed and implemented.

(Broadest Level of Decision)

Curriculum Theory as it Relates to:

1. The Philosophy of Education

The Educationally Disadvantaged Spanish-Speaking Child

(The Educationally Disadvantaged Spanish-Speaking Child is generally dropped into the Anglo-oriented middle-class cultural setting without any special provision being made.)

The target population for curriculum development.

1. Characteristics
2. Needs
3. Representative of Spanish-American culture; sometimes partially assimilated.
4. Implications for academic learning.

(Another level of decision-making)

2. View of the child

Key Areas Selected for Curriculum and Design of Program

1. Psychology of the Disadvantaged Child as it pertains to education and broader social context. This represents the abstracting out of salient characteristics of the disadvantaged child for academic learning.

(Continued)

2. View of subject-matter

4. Role of teacher

Key Areas...., continued

2. Cognition

   a. Styles of thinking
      (1) Abstract
      (2) Concrete

   b. Content of thinking in the two types - concepts/percepts

   c. Methods of reasoning
      (1) Inductive
      (2) Deductive
      (3) Analogical
          The formation and use of concepts

   d. Dimensions of thinking
      (1) Imaginative
      (2) Realistic/Intellective

3. Teacher Attitude and Education

4. Language

   a. Communication
      (1) Oral-aural
          Receptive (listening)
          Expressive (speaking)
      (2) Visual
          Receptive (reading)
          Expressive (writing)

   b. Linguistics

   c. Reflection of cognitive operations

   d. Spanish versus English

5. Content Fields

   a. Literature) Filtered through
   b. Social Studies) Listening
   c. Science) Speaking
   d. Mathematics) Reading
   e. Fine Arts) Writing
   f. Physical Education)

6. Learning Principles

(Decision-making)

jectives for the
anish-Speaking
ild

1. Indirect Sources - all that has preceded

2. Sources most directly from the five key areas noted

3. Type
   a. Child-centered
   b. Behavior plus content
   c. General objectives with supporting subobjectives
   d. Planning
   e. Evaluation

(Decision-making)

5. Role and function of objectives
   a. Sources -
      Subject matter
      Child development
      Learning
      Culture
   b. Focus -
      Content-centered
      Behavior-centered
      Content and behavior centered
      Teacher-centered
      Child-centered
   c. Relationship to sequence of and supporting learning experiences.
   d. Relationship to Evaluation.

equential Progression of
earning Experiences for
he Spanish-Speaking Educa-
ionally Disadvantaged
hild

The learning experience consisting of transactions/interactions occurring within the school setting: child with teacher; child with child; child with objects.

1. Techniques
2. Materials for subject-matter areas
3. Language
4. Specific activities
5. Follow-up
6. Evaluation

(Decision making)

llustrations of this Decision
aking Process in Action and
he Influence of the Preceding
spects Considered

1. Science-mathematics based materials
   Cognition < patterns - concepts
   a. Inductive → deductive
      Concrete/perceptual to abstract/conceptual
      Combination → analogical
   b. Language patterns
      Linguistics
      Communication
   c. Structuring (research on imposition of freedom)
   d. Content

APPENDIX III

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ORAL LANGUAGE DEVELOPMENT - ENGLISH SERIES - Topic III, Lesson 3

Code: T: Teacher
C: Class
P: Individual pupil

Conceptual Build-up

- Classify objects into sets based on their properties (color, shape, size) using the terms: set, member of a set; sets, member of sets.
- Learn and apply the concept of weight as an additional basis for classifying objects into sets: heavy, light; heavier than, lighter than.
- Learn and apply additional quantitative terms for describing and comparing members of sets: largest number, smallest number.

Terminology

New: light, lighter than
heavy, heavier than
number of members

Review: set(s)
many
few
member(s)
size
shape
color

Structure Model

Make a set which has members of the same size.
Are the members of this set the same size?
Yes, the members of this set are the same size.
Make a set which has members of the same color.
Are the members of this set the same color?
Yes, the members of this set are the same color. Or,
No, the members of this set are not the same color.
Make a set which has members of the same shape.
Are the members of this set the same shape?
Yes, the members of this set are the same shape.

Supply each pupil with sufficient number of items which have related properties: color, size, shape. After teacher has made up the appropriate referent set(s) for structure models being developed, each pupil arrange his set(s) accordingly, while practicing the language patterns.

1. T: Let's make a set which has members of the same size.
(On felt board or table, teacher forms a set made up of familiar items which may vary in color and shape, but are the same size.)
The members of this set are the same size.
Can you make a set which has members of the same size?
C: Yes, I can make a set which has members of the same size.
(Each child forms his set on felt box or in felt box, on his desk, or in shoe-box top.)
T: (Pointing to various sets made by the children)
Are the members of this set the same size?
C: Yes, the members of this set are the same size.

Establish all above patterns by following Procedures A, B; then B_2.

Note: Since these structure models are somewhat longer than earlier ones, the teacher should strive toward mastery by providing a number of repetitions, varied by the use of different but appropriate referents.

2. T: Let's make a set which has members of the same color.
(On felt board or table, teacher forms a set made up of items which may vary in size and shape but are the same color.)

Make two sets which have members of the same size.
How are these sets alike?
The members of these sets are the same size.
Make two sets which have members of the same color.
The members of these sets have the same color.
Make two sets which have the same number of members.
How are these two sets alike?
These sets have the same number of members.
How are these sets alike?
The members of these sets are the same size. (color) (shape)
These sets have the same number of members.
How are these sets different?
The members of this set are light.
The members of this set are heavy.
The members of this set are lighter (heavier) than the members of that set.

Materials

- A collection of familiar objects selected to represent the different shapes (both two-dimensional and three-dimensional), e.g., buttons, boxes, bottles, bottle tops, cans, paper cutouts, candies. There should be several different items in each shape, e.g., a pecan, an egg, a football; a coin, a record, a plate.
- A collection of familiar objects selected to represent color. There should be several different items in each color, e.g., a yellow circle, a yellow banana, a yellow crayon; a purple pyramid, a purple handkerchief, a purple grape.
- A collection of familiar objects selected according to size. There should be a number of different items which are the same relative size, e.g., a cup, a glass, a can; a wooden block, a bar of candy, a box.
- A collection of similar objects which have different weights.
- For each pupil, two shoe-box tops (or similar items) for arranging and classifying objects into sets.

The members of this set are the same color.
Can you make a set which has members of the same color?

C: Yes, I can make a set which has members of the same color.
(Each child forms his set using color as the classifier.)

T: (Pointing to different sets made by the children)
Are the members of this set the same color?

C: Yes, the members of this set are the same color.
(Or, when appropriate,)
No, the members of this set are not the same color.

Follow Procedures A, B, and B_2.

Make use of various set groupings to provide the opportunity for repetition and practice of structure models. Maintain a lively pace during drill periods.

3. T: Let's make a set which has members of the same shape.
(Teacher arranges set of familiar items which may vary in other properties, but which have the same shape.

Follow sentence patterns and procedures given in activity 2, using shape as the classifier.

4. Repeat all of activities 1, 2, and 3, using Procedure C; pupils responding independently while arranging appropriate sets.

For activities 5, 6, 7, and 8, teacher and pupils arrange pairs of sets, each pair having one common property: 1) size, 2) color, 3) shape, and then 4) number.

5. T: (Forming two sets made up of objects of the same size.)
Let's make two sets which have members of the same size.
The members of these sets are the same size.

T: How are these sets alike?
The members of these sets are the same size.

C: The members of these sets are the same size.

T: Can you make two sets which have members of the same size?

C: Yes, I can make two sets which have members of the same size.

Follow Procedures A, then B and B_2.

Use a variety of paired sets as referents while repeating and practicing structure models.

6. Arrange pairs of sets made up of objects of the same color. The number of items and their sizes and shapes may vary within the sets and between the sets.

Follow structure models and procedures given in activity 5, using color as the one common property used to classify objects into sets.

Have individual children arrange and classify objects as structure models are drilled.

7. Arrange pairs of sets made up of objects having the same shape.

Follow structure models and procedures given in activity 5, using shape as the one common classifier.

8. Arrange pairs of sets made up of the same number of members.

T: Let's make two sets which have the same number of members.
These sets have the same number of members.
How are these sets alike?

C: These sets have the same number of members.

T: Can you make two sets which have the same number of members?

Follow Procedures A, B, and B_2.

9. Make a set of empty boxes which are the same size, shape, color. Make another set of boxes, identical to the first, but which have been weighted by filling them with rocks, bits of metal, and the like, so that they are decidedly heavier.

T: Do these sets have the same number of members?

C: Yes, these sets have the same number of members.

T: Are the members of these sets the same size?

C: Yes, the members of these sets are the same size.

T: Are the members of these sets the same shape?

C: Yes, the members of these sets are the same shape.

T: Are the members of these sets the same color?

C: Yes, the members of these sets are the same color.

T: How are these sets different?
(Have the children handle the two sets of boxes, then supply the appropriate structure models:
The members of this set are light.
The members of that set are heavy.
The members of this set are lighter than the members of that set.
The members of that set are heavier than the members of this set.

Use various matched pairs to illustrate weight, e.g., rocks, books, bottles, and the like.

Follow Procedure A, supplying above models; children repeating. Listen carefully to responses and clarify any faulty intonation patterns or structures. Go on to Procedures B and B_2

When class has developed fluency in structure models, go on to Procedure C.

Reinforcement Activities

"Seeing Sets"

The class may be divided into three teams. A score-keeper is appointed for each team.

1) The teacher arranged pairs of sets having only one common property: color, size, shape, or number of members.
The members of each team are to observe the sets for 10 seconds; the first team to correctly identify the common property gains a point.
2) The team which gains 10 points first will set up a series of sets for the remaining two teams to identify. The members of the winning team may take turns devising sets for the game.

As the game is played, the teacher and pupils may originate other procedures and adaptations.

APPENDIX · IV

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DESARROLLO ORAL DEL IDIOMA - ESPAÑOL - Tópico III, Lección 3

Código: M: maestra
C: clase
A: alumno

Progresión Conceptual

- Clasifique objetos en juegos basándose en sus propiedades (color, forma, tamaño) usando los términos: juego, miembro de un juego; juegos, miembro de juegos).
- Aprenda y aplique el concepto de peso como una base adicional para clasificar objetos en juegos: pesado, liviano; más pesado que, más liviano que.
- Aprenda y aplique términos adicionales cuantitativos para describir y comparar los miembros de juegos: el número más grande, el número más pequeño.

Terminología

Términos nuevos: liviano, más liviano que
pesado, más pesado que
el número más grande
el número más pequeño

Repase: juego(s)
muchos
pocos
miembro(s)
más grande
el más grande
más pequeño
el más pequeño
tamaño
forma
color
número de miembros

Modelo de Estructura

Haz un juego que tenga miembros del mismo tamaño.
¿Son del mismo tamaño los miembros de este juego?
Sí, los miembros de este juego son del mismo tamaño.
Haz un juego que tenga los miembros del mismo color.

Dé a cada alumno un suficiente número de objetos que tengan propiedades relacionadas: color, tamaño, forma. Después de que la maestra haya hecho los juegos a los cuales se referirá para establecer los modelos de estructura, cada alumno debe de arreglar sus juegos mientras que practica los modelos de lengua.

1. M: Vamos a hacer un juego que tenga miembros del mismo tamaño.
(En la pizarra de fieltro o en la mesa, la maestra hace un juego compuesto de objetos familiares que varíen en color y forma, pero que sean del mismo tamaño.)
Los miembros de este juego son del mismo tamaño.
¿Puedes hacer un juego que tenga los miembros del mismo tamaño?
C: Sí, yo puedo hacer un juego que tiene miembros del mismo tamaño.
(Cada niño hace su juego en su caja de fieltro o adentro de la caja, en su escritorio o en su tapa.)
M: (Apuntando los varios juegos hechos por los niños)
¿Son del mismo tamaño los miembros de este juego?
C: Sí, los miembros de este juego son del mismo tamaño.

Establezca todos los modelos mencionados arriba siguiendo el Procedimiento A y B; luego B_2.

Nota: Siendo que estos modelos de estructura son algo más largos que los primeros, la maestra debe de tratar de que los alumnos aprendan bastante bien proporcionando un gran número de repeticiones, variadas por el uso de juegos diferentes a que referirse.

¿Son del mismo color los miembros de este juego?
Sí, los miembros de este juego son del mismo color.
No, los miembros de este juego no son del mismo color.

Haz un juego que tenga los miembros de la misma forma.
¿Tienen la misma forma los miembros de este juego?
Sí, los miembros de este juego tienen la misma forma.
Haz dos juegos que tengan miembros del mismo tamaño.
¿Cómo se parecen estos juegos?
Los miembros de estos juegos son del mismo tamaño.
Haz dos juegos que tengan miembros del mismo color.
Los miembros de estos juegos son del mismo color.
Haz dos juegos que tengan miembros de la misma forma.
Los miembros de estos juegos tienen la misma forma. Haz dos juegos que tengan el mismo número de miembros.
¿Cómo se parecen estos juegos?
Estos juegos tienen el mismo número de miembros.
¿Cómo se parecen estos juegos?
Los miembros de estos juegos son del mismo tamaño. (color) (forma)
Estos juegos tienen el mismo número de miembros.
¿Cómo son diferentes estos juegos?
Los miembros de este juego son livianos.
Los miembros de este juego son pesados.
Los miembros de este juego son más livianos (pesados) que los miembros de aquel juego.

Materiales

. Una colección de objetos familiares escojidos para representar las diferentes formas (de dos y tres dimensiones), e.g., botones, cajas, botellas, tapas de botellas, botes, recortes de papel, dulces. Debe haber varios objetos diferentes de cada forma, e.g., una nuez, un huevo, un fútbol; una moneda, un disco, un plato.

2. M: Vamos a hacer un juego que tenga miembros del mismo color.
(En la pizarra de fieltro o en la mesa, la maestra hace un juego compuesto de objetos que varién en tamaño y forma pero que sean igual de color.)
Los miembros de este juego son del mismo color.
¿Puedes hacer un juego que tenga miembros del mismo color?
C: Sí, yo puedo hacer un juego que tiene miembros del mismo color.
(Cada niño forma su juego usando color como el clasificador.)
M: (Apuntando los diferentes juegos hechos por los niños)
¿Son del mismo color los miembros de este juego?
C: Sí, los miembros de este juego son del mismo color.
(O, cuando sea apropiado,)
No, los miembros de este juego no son del mismo color.

Siga los Procedimientos A, B, y B_2.
Haga uso de varias agrupaciones de juegos para dar oportunidad para la repetición y práctica de los modelos de estructura.
Mantenga un paso animado durante los períodos de práctica.

3. M: Vamos a hacer un juego que tenga miembros de la misma forma.
(La maestra arregla un juego de objetos familiares que puedan ser variados de otras propiedades, pero que tengan la misma forma.)

Siga los modelos de frase y procedimientos dados en la Actividad 2da, usando forma como el clasificador.

4. Repita todas las actividades 1ra, 2da y 3ra, usando el Procedimiento C, los alumnos respondiendo independientemente mientras arreglan los juegos apropiados.

Para las actividades 5ta, 6ta, 7ta y 8va, la maestra y los alumnos arreglan pares de juegos, cada par teniendo una propiedad común: 1)tamaño, 2)color, 3)forma, y luego 4)número.

- Una colección de objetos familiares escojidos para representar color. Debe haber varios objetos diferentes de cada color, e.g., un círculo amarillo, un un plátano amarillo, un creyón amarillo; una pirámide morada, un pañuelo morado, una uva morada.
- Una colección de objetos familiares escojidos según el tamaño. Debe haber un gran número de objetos diferentes que sean relativamente del mismo tamaño, e.g., una taza, un vaso, un bote; un bloque de madera, un dulce (candy bar), una caja.
- Una colección de objetos similares que tengan diferente peso.
- Para cada alumno, dos tapas de cajas de zapatos (o algo parecido) para arreglar y clasificar objetos en juegos.

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5. M: (Formando dos juegos compuestos de objetos del mismo tamaño.)
Vamos a hacer dos juegos que tengan miembros del mismo tamaño.
Los miembros de estos juegos son del mismo tamaño.
M: ¿Cómo se parecen estos juegos?
Los miembros de estos juegos son del mismo tamaño.
C: Los miembros de estos juegos son del mismo tamaño.
M: ¿Puedes hacer dos juegos que tengan miembros del mismo tamaño?
C: Sí, yo puedo hacer dos juegos que tienen miembros del mismo tamaño.

Siga el Procedimiento A, luego B y luego B_2. Use una variedad de pares de juegos para referirse mientras los modelos de estructura se repiten y se practican.

6. Arregle pares de juegos compuestos de objetos del mismo color. El número de objetos y sus tamaños y formas pueden ser variados dentro de los juegos y entre los juegos.

Siga los modelos de estructura y procedimientos dados en la Actividad 5ta, usando color como una de las propiedades comunes usadas para clasificar objetos en juegos.

Haga que cada uno de los niños arregle y clasifique objetos así como los modelos de estructura son practicados.

7. Arregle pares de juegos compuestos de objetos teniendo la misma forma.

Siga los modelos de estructura y procedimientos dados en la Actividad 5ta, usando forma como el único clasificador común.

8. Arregle pares de juegos compuestos del mismo número de miembros.

M: Vamos a hacer dos juegos que tengan el mismo número de miembros.
¿Cómo se parecen estos juegos?
C: Estos juegos tienen el mismo número de miembros.
M: ¿Puedes hacer dos juegos que tengan el mismo número de miembros?

Siga los Procedimientos A, B, y B_2.

9. Haga un juego de cajas vacías que tengan la misma forma, tamaño y color.
   Haga otro juego de cajas idénticas al primero, pero que pesen más (hágalas más pesadas) que el primer juego.
   M: ¿Tienen el mismo número de miembros estos juegos?
   C: Sí, estos juegos tienen el mismo número de miembros.
   M: ¿Son iguales de tamaño los miembros de estos juegos?
   C: Sí, los miembros de estos juegos son iguales de tamaño.
   M: ¿Tienen la misma forma los miembros de estos juegos?
   C: Sí, los miembros de estos juegos tienen la misma forma.
   M: ¿Son del mismo color los miembros de estos juegos?
   C: Sí, los miembros de estos juegos son del mismo color.
   M: ¿Cómo son diferentes estos juegos?

Haga que los niños manejen los dos juegos de cajas, después déles los modelos de estructura apropiados:

Los miembros de este juego son livianos.
Los miembros de aquel juego son pesados.
Los miembros de este juego son más livianos que los miembros de aquel juego.
Los miembros de aquel juego son más pesados que los miembros de este juego.

Use varios pares de juegos iguales para ilustrar peso, e.g., piedras, libros, botellas, y cosas parecidas.

Siga el Procedimiento A, dando los modelos de arriba; los niños repitiendo. Escuche con cuidado las respuestas y clarifique cualquier punto de entonación o modelo de estructura que no sea correcto. Siga con los Procedimientos B y B_2.

Cuando la clase haya aprendido bien estos modelos de estructura, siga con el Procedimiento C.

Actividad Reforzadora

"Viendo Juegos"

La clase puede ser dividida en tres partidos (teams). Un anotador (score-keeper) es escojido para cada partido.

1) La maestra arregla pares de juegos que tienen nada más una propiedad común: color, tamaño, forma o número de miembros.
   Los miembros de cada partido deben de observar los juegos 10 segundos; el primer partido que identifique correctamente la propiedad común gana un punto.

2) El partido que gane diez puntos primero arreglará la siguiente serie de juegos para que los demás partidos los identifiquen. Los miembros del partido que ganó puede tomar turnos en arreglar juegos para este juego.

Así como el juego es jugado, la maestra y los alumnos pueden originar otros procedimientos y adaptaciones.

APPENDIX V

UNIT VIII PETS

INSTRUCTIONS TO THE TEACHER

Present three or four pictures identifying each animal, making sure youngsters associate the picture with the word.

EXPOSITION

Teacher says, "Boys and girls, today we are going to talk about pets...our animals around the house."

BASIC DIALOGUE

Teacher: (Pointing to picture of a dog) "This is a dog."
Pupil: (Repeat) "This is a dog."

NOTE TO TEACHER

Watch for elongation in "dog" as children say the word dog again. Have children show by moving hands out in crescendo how to prolong and open the [ɔ] sound so that they will make the distinction between this and the usual short close sound in Spanish.

Teacher: (Presents picture of a cat) "This is a cat."
Pupils: (Repeat) "This is a cat."
Teacher: "Cat."
Pupils: "Cat."

Teacher: (Presents picture of a bird) "This is a bird."
Pupils: (Repeat) "This is a bird."

NOTE TO TEACHER

The [ɝ] sound does not exsist in Spanish. Help youngsters form the sound in isolation by placing sound properly in mouth and having child do same.

Continue the same procedure for fish, rabbit, puppy, turtle, chicken, kitty, bear, chicken, rooster, deer, donkey, duck, frog, parrot, parakeet, lamb, pony, rabbit, turtle, snake. In each case view the pronunciation as a model first and judge the correctness of the children's pronunciation secondly.

NOTE: Beware of the short i sound in fish which does not exist in Spanish and take time to help the child place it correctly. Also, the sh. To prevent children from using ch to replace this sound, have them hold lower jaw closed by placing hand hard under chin, thus only sh is possible.

SUPPLEMENTARY MATERIAL

This would consist of any review vocabulary that might be pertinent to the present unit, much as colors, numbers, size comparisons, etc. Suggested for this unit are such as the following childrens' songs: "Old MacDonald" "Mary Had a Little Lamb", and "Doggy in the Window".

DIALOGUE ADAPTATION

The questions would be based on basic dialogue, but would be reworded to be recognized by pupil. Encourage individual responses by pupil. Should the pupil hesitate to answer, have the group answer, then the individual pupil repeats. In this phase of your presentation include your supplementary materials.

Teacher: (Show pictures appropriate to each line)	Pupil:
What is this? (Points to picture of dog)	That's a dog. (From seat) (Close to picture) This is a dog.
What color is the dog?	The dog is brown.
Is this a big dog or a little dog?	This is a little dog.
What is a little dog called?	It is called a puppy.
Is this a puppy? (Picture of dog.)	No, it is a big dog.
Are these dogs? (Picture of big dogs and puppies)	Yes, they are dogs.
Is this a big or little cat?	It's a little cat.
What is a little cat called?	It's a kitten.
What color is this bird?	It's a yellow bird.
Who knows what a yellow bird is?	It's a canary.
What do you call a yellow bird?	We call it a canary.
Is the bird little or big?	The bird is little.
What does it do?	It sings.
Where is the bird?	The bird is in the tree.
And where else?	In the cage.
What color is the fish?	The fish is orange.
What is this fish?	It's a goldfish.
What do you call this fish?	We call it a goldfish.
Is it a little or big fish?	It's a little fish.
What does it do?	It swims.
Where does it swim?	It swims in a bowl.
Who knows what this is?	This is a bear. (touching picture) That is a bear. (pointing from desk)
What do you call this animal?	We call it a bear.

Is this a big bear?	Yes, this is a big bear.
What color is the bear?	The bear is brown.
Who knows what animal says chick, chick?	A chicken says chick, chick, chick.
Do you see a chicken? (Pointing to chicken)	Yes, I see a chicken.
What color is the chicken?	The chicken is white.
Where is the chicken?	There's the chicken. (pointing)
Does a chicken have feathers? (Show them a feather)	Yes, a chicken has feathers.
What do you call a mother chicken?	We call a mother chicken a hen.
What says cock a doodle-doo?	The rooster says cock a doodle-doo.
Does a rooster have feathers?	Yes, a rooster has feathers.
What do you call a father chicken?	We call a father chicken a rooster.
OH! What is this?	This is a deer.
What color is the deer?	The deer is brown.
What is the deer doing? (Show picture of a deer eating)	The deer is eating.
What is this? (Show picture of a donkey)	This is a donkey.
Is this a donkey? (Pointing to bear)	No, that's a bear.
This is a donkey. (Show picture of a donkey)	Yes, this is a donkey.
Is this a blue donkey?	No, that's a brown donkey.
Do you see a duck? (Show picture of a duck.)	Yes, I see a duck.
What does the duck say?	The duck says quack, quack.
What color is the duck?	The duck is white.
Who says crock, croak?	The frog says croak, croak.
What color is the frog?	The frog is green.
What does the frog do?	The frog jumps.

Who had a little lamb?	Mary had a little lamb.
What color was the lamb's fleece?	The lamb's fleece was white.
What is this green bird? (Pointing to a parrot)	The green bird is a parrot.
Can a parrot talk?	Yes, a parrot can talk.
Which little bird looks like a small parrot? (Point to a parakeet.)	A parakeet looks like a little parrot.
Do you see a parakeet?	Yes, I see a parakeet.
What is this? (Pointing to monkey)	This is a monkey.
What color is it?	It is a brown monkey.
What is it doing?	The monkey is playing.
Is this a pony?	Yes, this is a pony.
What color is the pony?	The pony is white.
Do you like to ride a pony?	Yes, I like to ride a pony.
What is this? (Pointing to rabbit)	This is a rabbit.
What color is the rabbit?	The rabbit is white.
What color is it?	It's white.
What is the rabbit doing? (Answer will vary according to picture)	The rabbit is eating.
What is this? (Pointing to turtle)	This is a turtle.
What color is the turtle?	The turtle is green.
What is this? (Pointing to snake)	This is a snake.
Can you hear a snake?	Yes, a snake goes s-s-s.
Are you afraid of snakes?	Yes, I'm afraid of snakes.
Are you afraid of snails?	No, I'm not afraid of snails.

DIRECTED DIALOGUE

The teacher cues the student on specific questions to ask another pupil. If the child hesitates in asking, the entire class or group asks the question. If the answering child hesitates, the group responds.

Teacher:	Pupil:
Juan, ask María what color the dog is.	Juan: What is the color of this dog? Maria: It is brown.
Lupe, ask Ruben what color the kitten is.	Lupe: What color is this kitten? Ruben: This kitten is white.
Ruben, ask Lupe if the kitten is little or big.	Ruben: Is this kitten little or big? Lupe: The kitten is little.
María, ask Jesús where the bird is.	María: Jesus, where is the bird? Jesus: The bird is in the tree.
Jesús, ask Lola what the fish is doing.	Jesús: What is the fish doing? Lola: It is swimming.
José, ask María if the bear is big.	José: Is the bear big? María: The bear is big.
Raul, ask Lupe which animal says chick, chick,	Raul: Which animal syas chick, chick, chick. Lupe: The chicken says chick.
Magda, ask Leon if the rooster has feathers.	Magda: Does the rooster have feathers? Leon: Yes, the rooster has feathers.
Berta, ask Luisa to show you a feather.	Berta: Show me a feather. Luisa: This is a feather.
Beto, ask María to tell you what the deer is doing.	Beto: What is the deer doing? María: The deer is eating.
Pilar, ask Ruben to tell you what color the donkey is.	Pilar: What color is the donkey? Ruben: The donkey is brown.
Mirta, ask Paula what the duck says.	Mirta: What does the duck say? Paula: The duck says quack.
José, ask Daniel to tell you what color the frog is.	José: What color is the frog? Daniel: The frog is green.
Diana, ask Carlos what color the lamb's fleece is.	Diana: What color is the lamb's fleece? Carlos: The lamb's fleece is white.
Sara, ask Raul if a parrot talks.	Sara: Can a parrot talk? Raul: Yes, a parrot can talk.
Mike, ask Jane if a parakeet looks like a parrot.	Mike: Does a parakeet look like a parrot. Jane: Yes, a parakeet looks like a small parrot.

Benny, ask Tommy if he likes to ride a pony.	Benny: Do you like to ride a pony? Tommy: Yes, I like to ride a pony.
Marge, ask Arón what the rabbit is doing.	Marge: What is the rabbit doing? Arón: The rabbit is running.
Beto, ask Tina to tell you if the turtle is green.	Beto: Is the turtle green? Tina: Yes, the turtle is green.
Mike, ask Lita if she is afraid of snakes.	Mike: Are you afraid of snakes? Lita: Yes, I am afraid of snakes.

STRUCTURE DRILL

Through models, the teacher makes the pupil aware of different patterns of speech in English.

1. Response to drill

Elicit responses to questions based on unit.

Teacher:	Student:
What do you have?	I have a dog.
What do you have?	I have a cat.
What does he have?	He has a dog.
What does she have?	She has a cat.
What do I have?	You have a bird.
What do you have?	I have a chicken.
What do you have?	I have a rooster.
What does he have?	He has a chicken.
What does Mario have?	He has a chicken.
What does María have?	María has a rooster.
What do they have at the zoo?	They have a bear.
What do they have at the ranch?	They have a deer.
What do you have?	I have a baby chicken.
What do I have?	You have a chicken.
What do you have?	I have a donkey.

What does Maida have?	She has a duck.
What does Mario have?	He has a frog.
What do they have?	They have a lamb.
What does she have?	She has a parrot.
What does he have?	He has a parakeet.
What are they riding?	They are riding a pony.
What do you have?	I have a rabbit.
What does María have?	María has a turtle.
What does Mario have?	Mario has a snake.

NOTE TO TEACHER: Make it a game. Use clay, cardboard, etc... type of toy figures, hand them out and ask questions.

SUBSTITUTION DRILL

Present your model sentence and tell the pupil to repeat.

Teacher:	Pupil:
What do you have?	I have a dog.
------- they----	They have a dog.
------- we ----	We have a dog.
------- I ----	I have a dog.
He has a dog.	He has a dog.
She---------	She has a dog.
Pablo-------	Pablo has a dog.

NOTE TO TEACHER

Follow same procedure with cat, bird, chicken, rooster, bear, deer, chicken, donkey, duck, frog, lamb, parrot, parakeet, pony, rabbit, turtle, and snake.

3. REPLACEMENT DRILL

The teacher may substitute the noun, verb, or adjective in separate drills after presenting a model, using as many vocabulary words as possible.

Teacher:	Pupil:
The dog is brown	The dog is brown
The cat---------	The cat is brown.

NOTE TO TEACHER: Follow same procedure with bird, chicken, rooster, bear, deer, chicken, donkey, duck, frog, lamb, parrot, parakeet, bear, deer, pony, rabbit, turtle, and snake.

(Following this pattern, add other words the children know, matching color.)

APPENDIX VI

U.S.O.E. 2648: READING READINESS CHECKLIST

Individual Totals Sheet

Code__________ Code__________ Code__________

School______________________ Teacher__________________ Name____________

Date______________ Total Readiness Rating______________

Areas of Readiness	Levels of Development		
	Scores		
	Highly Favorable	Adequate	Limited
I. Language Development			
II. Physical Factors			
III. Social Factors			
IV. Emotional Factors			
V. Auditory Perception			
VI. Visual Perception			
VII. Experiential Background			
VIII. Cognitive Abilities			
Totals (44 items to rate)			

Total score in Highly Favorable Column = Readiness Rating

35-44 = 5 - Highly favorable level of development in factors related to success in beginning reading
29-34 = 4 - Adequate progress in readiness development; fair risk for beginning
22-28 = 3 - Limited progress in readiness development; needs more readiness experiences
15-21 = 2 - Very limited progress in readiness; needs many more readiness experiences
0-14 = 1 - Definitely not ready for beginning reading

READING READINESS CHECKLIST

Individual Totals Sheet

Code__________ Code__________ Code__________

School____________________ Teacher____________________ Name____________

Date______________ Total Readiness Rating

Areas of Readiness	Levels of Development		
		Scores	
	Highly Favorable	Adequate	Limited
I. Language Development			
II. Physical Factors			
III. Social Factors			
IV. Emotional Factors			
V. Auditory Perception			
VI. Visual Perception			
VII. Experiential Background			
VIII. Cognitive Abilities			
Totals (43 items to rate)			

Total score in Highly Favorable Column = Readiness Rating

35-43 = 5 - Highly favorable level of development in factors related to success in beginning reading
29-34 = 4 - Adequate progress in readiness development; fair risk for beginnging
22-28 = 3 - Limited progress in readiness development; needs more readiness experience
15-21 = 2 - Very limited progress in readiness; needs many **more readiness** experiences
0-14 = 1 - **Definitely not ready for** beginning reading

c 1964 Thomas D. Horn

Name____________________________

U.S.O.E. 2648: READING READINESS CHECKLIST

Aspects of Reading Readiness	Highly Favorable	Adequate	Limited
I. LANGUAGE DEVELOPMENT IN ENGLISH A. Structural Aspects 1. Communicates personal needs through single words or phrases.			
2. Conveys information in response to simple questions, e.g., Where do you live? What is your name?			
3. Uses correct English structure models limited to content from 642 and science.			
4. Uses correct English structure models and appropriate descriptive terms and concepts in all speaking which he does.			
B. Sound Aspects--The degree to which a child sounds like a native English speaker 1. Uses English with Spanish stress and intonation patterns.			
2. Uses English stress and intonation pattern but misses certain sounds, e.g., ch(tʃ) for sh(ʃ), ē(i) for i(ɪ), s(s) for z(z), d(d) for th(ð).			
3. Uses English stress and intonation pattern and correctly speaks the patterns limited to 642 and science models.			
4. Evidences fluent command of English. Speaks fluently with the sound patterns of a standard American English dialect.			
Total Language			

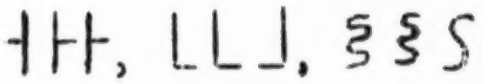
Name______________________________

	Highly Favorable	Adequate	Limited
II. PHYSICAL DEVELOPMENT A. General Health 1. Has generally good health history.			
2. Has no marked deviation from group, e.g., hyperactivity, constant fatigue, listlessness, over/under size, over/under weight.			
B. Hearing 1. Responds appropriately to directions and questions directed at him from any point in the room.			
2. Responds appropriately to everyday sounds, e.g., musical rhythms, imitation of teacher's modeling in English and/or Spanish, whistles, laughs.			
C. Vision 1. Shows no evidence of squinting, rubbing, watering of eyes.			
2. Holds materials requiring close visual scrutiny at appropriate distance (14-20").			
3. Does not fatigue rapidly or complain of headaches on visual tasks.			
D. Motor Coordination 1. Has gross motor coordination, e.g., skipping, running, walking, throwing (no clumsiness; stumbling; jerky motions of head, legs, arms, hands).			
2. Has fine motor coordination, e.g., keeping on lines for cutting out, folding; ease in use of scissors, paints, pencils.			
9 Total Physical			

Name ____________________

	Highly Favorable	Adequate	Limited
III. SOCIAL FACTORS A. Participates easily and effectively in group play and academic experiences.			
B. Shows consideration for others, e.g., sharing, taking turns, assisting another child.			
C. Takes good care of school materials and personal possessions.			
3 Total Social			
IV. EMOTIONAL FACTORS A. Works well independently; shows self-reliance.			
B. Shows good balance in feelings, i.e., does not easily anger or cry, is able to express his emotions appropriately. (Note: danger potential in child who never shows any feeling.)			
C. Accepts and learns well from discipline and suggestions.			
3 Total Emotional			
V. AUDITORY PERCEPTION* A. Auditory Discrimination--Has ability to discriminate between likenesses and differences in: 1. Familiar everyday sounds, e.g., whistle, door-closing, footsteps.			
2. Gross patterns of sounds in words (walk, run) and sentences (This is a circle; This is a triangle).			
3. Fine patterns of sounds in words (cap, tap; full, pull; pit, pet) and sentences (This is a cat; This is a cap).			

Name____________________

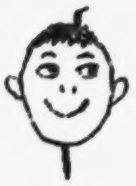
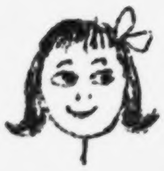
	Highly Favorable	Adequate	Limited
B. Comprehension (listening) 1. Listens to, remembers, and carries out directions involving more than one step.			
2. Attends to a listening task, e.g., stories, directions, music, and ignores the usual noises of the classroom and additional distracting noises outside the classroom (this is selective perception).			
3. Listens to, remembers, and expresses various kinds of information, e.g., songs, sequence of events in, main idea(s) of, traits of characters in a story; facts and ideas in social studies, science and math.			
6 Total Auditory			
VI. VISUAL PERCEPTION* A. Has ability to discriminate between visual likenesses and differences in: 1. Over-all configuration of objects.			
2. Similar-looking objects or forms. 			
3. Similar-looking words and sentences without reading them, e.g., eat, cat; lid, lip; fan, fun; We come, We came.			
B. Has established a consistent pattern of looking from left to right.			
C. Understands that visually presented objects, pictorial representations of events and objects, and printed symbols (numbers and letters) are used to convey meanings.			
5 Total Visual			

*Both auditory and visual perception depend upon an understanding of the same-different relationship.

Name______________________________

	Highly Favorable	Adequate	Limited
VII. EXPERIENTIAL BACKGROUND A. Manifests a background of experiences which are closely related to those presented in the basal materials.			
B. Manifests essentially the same values and attitudes as those expressed in the basal materials.			
C. Associates readily similar experiences which he has had to those encountered in basal readiness materials.			
3 Total Experiential			
VIII. COGNITIVE ABILITIES A. Infers correctly the distinctive qualities and characteristics of objects, characters, events, *e.g.*, sad, happy; hard, soft; old, young; scared, unafraid.			
B. Identifies correctly the set(s) of relationships presented in either visual or auditory form: 1. Chronological sequence of events (telling about or showing someone building a house, running an errand). (See also V-B-3.)			
2. Cause and effect relationship, *i.e.*, predicting, seeing, describing how certain conditions will probably have or do have certain outcomes (describing what must have happened from a picture of a child crying with a broken toy on the floor beside him).			
3. Classification. Applying the same-different relationship in grouping objects, events, ideas by properties and then classes, *e.g.*, telling that a triangle, circle, square, rectangle, ellipse are all shapes; understanding a balloon, doll, toy car, ball are all toys.			

Name________________________________

	Highly Favorable	Adequate	Limited
4. Analogical Relationships. a. Recognizes like properties/qualities in groups of seemingly disparate *concrete* objects, *e.g.*, a circle is to an ellipse as a square is to a rectangle (principle of elongation).			
b. Abstracts and expresses the parallel ideas, qualities, and features in two or more seemingly different situations. Example:   Both of these children just had a surprise. The boy just won a race for the first time. The girl just got some new shoes for the first time. How do they *both* feel? How would you feel if you were the boy? How would you feel if you were the girl?			
6 Total Cognitive			

APPENDIX VII

Model Suggestions for Inter-Center Analyses

L. R. Whiteside, The University of Texas

Detailed below is a procedure to follow when comparing criterion results between groups while at the same time removing the effect of another variable. One way of stating the question involved is: Are the expected criterion values the same for persons in the two groups when their co-variant scores (in this case, Pre-test scores) are the same? Analysis may be accomplished by a multiple linear regression technique for traditional "co-variance" analysis (or, "concomitant variable" analysis in the terminology of Bottenburg and Ward, 1963).

The following pattern holds for Hypotheses 2 and 5 (stated as questions in the proposal under analyses of results). Basically, it is also the procedure for Hypotheses 3, 4, 6, and 7; however, because the latter involve more than two groups, there are larger numbers of possible "paired" comparisons to be made in them.

The "full" model for the Pre-Post analysis of a two-group problem is:

$$Y = a_0U + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + E_0$$

where, Y = the criterion score (Post-test)

U = the unit vector (or $X_1 + X_2 + X_3$)

$a_0, a_1, \ldots, a_4$ = regression weights (constants)

$X_1 = 1$, if subject is a member of group 1; zero otherwise

$X_2 = 1$, if subject is a member of group 2; zero otherwise

X_3 = Pre-test score if subject is in group 1; zero otherwise

X_4 = Pre-test score if subject is in group 2; zero otherwise

E_0 = error made in predicting Y from $\underline{a}$ and $\underline{X}$ terms

Solving this equation for a group of subjects (where Y and the Xs are treated as vectors) will yield the following information:

a_3 = the slope of the regression line for group 1

a_4 = the slope of the regression line for group 2

$a_1 + a_0$ = intercept of group 1 regression line with y-axis

$a_2 + a_0$ = intercept of group 2 regression line with y-axis

(Technically, a_3 and a_4 may be regarded as "slopes" only if the co-variant and criterion scales are the same. However, even if the scales differ, the procedure for analysis is the same.)

Since the basic concern is to determine if one group is superior to another, an important thing to know is whether or not that superiority (if any) is constant throughout the range of interest. To do this is equivalent to checking for a constant difference between the expected or predicted criterion values of the two groups throughout the range of scores. The semantic hypothesis that this difference is constant is represented mathematically by setting the values for the existing regression slopes equal to each other: $a_3 = a_4 = b_1$.

Imposing this restriction on the full model defined above, one obtains:

$$Y = a_0U + a_1X_1 + a_2X_2 + b_1(X_3 + X_4) + E_1$$

where, b_1 = regression weight (constant)

E_1 = error obtained in predicting Y from a, b, and X terms (and other terms defined above).

This "restricted" model forces the production of two regression lines that do have identical slopes (b_1); i.e., the two regression lines are parallel upon solution of this equation. If the amount of increase in error (represented by the E terms) involved in predicting Y from the restricted model is not statistically significant, then the regression lines of the full model may be considered to be parallel except for "chance" or "sampling error" differences. If the error sum of squares for the full model (ESS_0) equals the error sum of squares of the restricted model (ESS_1), the lines are exactly parallel.

The following formula for the F-ratio may be used as an index of the probability that the existing slope differences (and the concomitant increase in error from ESS_0 to ESS_1) could be due to "chance" or to "sampling error" differences if the regression lines were parallel in the population:

$$F_1 = \frac{(ESS_1 - ESS_0) \ / \ df_1}{(ESS_0 \ / \ df_2)}$$

where, ESS_0 = error sum of squares for the full model (or, E_0 transpose E_0 in vector terminology)

ESS_1 = error sum of squares for the restricted model

df_1 = degrees of freedom for the numerator; the number of linearly independent variables in the full model minus the number of linearly independent variables in the restricted model

df_2 = degrees of freedom for the denominator; the number of subjects in the study minus the number of linearly independent variables in the full model

(Bottenburg and Ward, 1963, pp. 45-47).

The next step to take is determined by the degree to which this test identifies the parallelism of regression slopes. If F_1 is evaluated as statistically significant, the null hypothesis is rejected and the regression lines are assumed to be different in slope. Since the slopes are different, the two lines cross at some point. Whether or not this point falls within the range of interest has much to do with the interpretation of the results. The intersection point may be estimated from the full model regression weights:

$$\frac{a_2 - a_1}{a_3 - a_4}$$

where the a values are defined as above.

If the F-ratio is non-significant, then the regression lines cannot be assumed to depart from parallelism. Then it becomes appropriate to check for the superiority of one group over the other with regard to the criterion level. The distance separating parallel lines may be evaluated by checking the distance separating them at their points of intersection with the y-axis. To do this, the restricted model computed above is then accepted as the full model (on the basis of the evaluation of F_1). To determine whether or not the two parallel regression lines occupy the same locus (i.e., whether or not they are co-linear), the following mathematical restriction is made: $a_1 = a_2 = b_2$. The resulting further restricted model becomes:

$$Y = a_0U + b_2\ (X_1 + X_2) + b_1\ (X_3 + X_4) + E_2$$

where, b_2 = a regression weight (constant)

E_2 = error obtained by predicting Y from a, b, and X terms (and the other terms are defined as above).

Compute:

$$F_8 = \frac{(ESS_2 - ESS_1)\ /\ df_1}{(ESS_1)\ /\ df_2}$$

where, ESS_2 = error sum of squares for the further restricted model (with other terms defined above).

If F_8 is non-significant, indicating that the lines do not depart from co-linearity it is concluded that neither group is superior to the other. That is, from a given point on the Pre-test (co-variant) scale, there is not a significant difference between the predicted Post-test scores for persons in the two groups.

If F_8 is statistically significant, it can be stated with a certain degree of probability that "with identical scores on the Pre-test, persons in group X tend to score significantly higher on the Post-test than those in group Y" (X being the gro with the higher regression line level; Y, the lower). Consequently, one group may be recommended (or method, if that be the case) over the other for the entire range of scores.

****

The procedure becomes more complex as the number of groups compared increases. Figure 1 shows the steps to follow in evaluating a three-group problem (as in Hypotheses 3, 4, and 7). F_1 through F_{11} on that chart are computed from error sums of squares for the following linear models:

(FM = Full Model; RM = Restricted Model)

F_1

FM: $Y_0 = a_0U + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + a_5X_5 + a_6X_6 + E_0$

RM1: $Y_1 = a_0U + a_1X_1 + a_2X_2 + a_3X_3 + a_7X_7 + E_1$

F_2

FM: (same as FM above)

RM2: $Y_2 = a_0U + a_1X_1 + a_2X_2 + a_3X_3 + a_8(X_4 + X_5) + a_6X_6 + E_2$

F_3

FM: (same as FM above)

RM3: $Y_3 = a_0U + a_1X_1 + a_2X_2 + a_3X_3 + a_5X_5 + a_9(X_4 + X_6) + E_3$

F_4

FM: (same as FM above)

RM4: $Y_4 = a_0U + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + a_{10} (X_5 + X_6) + E_4$

F_5

FM: (same as RM2 above)

RM5: $Y_5 = a_0U + a_{11} (X_1 + X_2) + a_3X_3 + a_8 (X_4 + X_5) + a_6X_6 + E_5$

F_6

FM: (same as RM3 above)

RM6: $Y_6 = a_0U + a_{12} (X_1 + X_3) + a_2X_2 + a_5X_5 + a_9(X_4 + X_6) + E_6$

F_7

FM: (same as RM4 above)

RM7: $Y_7 = a_0U + a_1X_1 + a_{13} (X_2 + X_3) + a_4X_4 + a_{10}(X_5 + X_6) + E_7$

FM: (same as RM1 above)

F_8 RM8: $Y_8 = a_0U + a_{14}(X_1 + X_2 + X_3) + a_7X_7 + E_8$

FM: (same as RM1 above)

F_9 RM9: $Y_9 = a_0U + a_{15}(X_1 + X_2) + a_3X_3 + a_7X_7 + E_9$

FM: (same as RM1 above)

F_{10} RM10: $Y_{10} = a_0U + a_2X_2 + a_{16}(X_1 + X_3) + a_7X_7 + E_{10}$

FM: (same as RM1 above)

F_{11} RM11: $Y_{11} = a_0U + a_1X_1 + a_{17}(X_2 + X_3) + a_7X_7 + E_{11}$

where, Y_i $(i = 1, 11)$ = the criterion, Post-test scores

a_i $(i = 1, 17)$ = regression weights (constants)

U = the unit vector (or, $X_1 + X_2 + X_3$)

X_1 = 1 if subject is from group 1; zero otherwise

X_2 = 1 if subject is from group 2; zero otherwise

X_3 = 1 if subject is from group 3; zero otherwise

X_4 = Pre-test score if subject is from group 1; zero otherwise

X_5 = Pre-test score if subject is from group 2; zero otherwise

X_6 = Pre-test score if subject is from group 3; zero otherwise

X_7 = Pre-test score (or, $X_4 + X_5 + X_6$)

E_i $(i = 1, 11)$ = error made in predicting Y_i from a and X terms

Because many linear regression programs compute multiple-R^2 (RSQ) as an output instead of error sums of squares (ESS), it is often more convenient to use the equivalent F-ratio formula that makes use of RSQs (see page 12 of proposal).

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Hypothesis 6 will be evaluated in exactly the same way as that outlined above. Because of the larger number of groups available for paired-comparisons, a much larger number of F-ratios are relevant. Yet, the exact number of F-ratios to be obtained will depend upon results of prior portions of the analysis.

Hypothesis 1 may be evaluated by the typical analysis of variance procedure or with the same multiple linear regression technique.

For Hypothesis 1, the "full" linear regression model is:

$$Y = a_1X_1 + a_2X_2 + a_3X_3$$

where, Y = Reading Readiness scores

a_1, a_2, a_3 = regression weights (constants)

X_1 = 1 if subject is in Method A group; zero otherwise

X_2 = 1 if subject is in Method B group; zero otherwise

X_3 = 1 if subject is in Method C group; zero otherwise

To test the null hypothesis that there is no statistical difference between the mean scores of the three groups on Readiness, set

$$a_1 = a_2 = a_3 = b_1$$

The "restricted" model is:

$$Y = b_1U$$

where, b_1 = regression weight (constant)

U = the unit vector (or $X_1 + X_2 + X_3$)

The F-ratio between this full and restricted model is exactly the same (within rounding error) as an F-ratio obtained in traditional univariate analysis of variance and is evaluated in the same way.

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References

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APPENDIX VIII

List of Tests

Gates Word Pronunciation Test. Arthur I. Gates.

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Goodenough-Harris Drawing Test. Dale B. Harris. Harcourt, Brace and World, Inc., New York, 1963.

Identical Forms. L. L. Thurstone and T. E. Jeffrey. The Psychometric Laboratory, The University of North Carolina, 1956 (Research Edition).

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Linguistic Capacity Index. Frederick H. Brengelman and John C. Manning. University of Minnesota, Minneapolis 55455.

Metropolitan Readiness Tests, Form A. Gertrude H. Hildreth, Nellie L. Griffiths and Mary E. McGauvran. Harcourt, Brace and World, Inc., New York, 1964.

Murphy-Durrell Diagnostic Reading Readiness Test, Revised Edition. Helen A. Murphy and Donald D. Durrell. Harcourt, Brace and World, Inc., New York, 1964.

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Phonetically Regular Words Oral Reading Test. Edward Fry. Rutgers University, New Brunswick, New Jersey.

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Serie Interamericana; Prueba De Habilidad General, Nivel 1, Primario, Forma DEs (HG-1-DEs). Herschel T. Manuel. Guidance Testing Associates, Austin, Texas, 1962 (Research Edition).

Stanford Achievement Test, Primary I Battery, Form X. Truman L. Kelley, Richard Madden, Eric F. Gardner and Herbert C. Rudman. Harcourt, Brace and World, New York, 1963, 1964.

APPENDIX IX

A COMPARISON OF SCHOOL YEARS COMPLETED BY SPANISH-SURNAME AND APPALACHIA POPULATIONS:

1960

	Spanish-Surname N=1,458,112	Appalachia N=8,396,345
Less than 5 years of school	35.6%	11.6%
4 years of high school	26.7	32.3
4 years of college or more	6.2	5.2

Sources:

United States Census, 1960, Persons of Spanish-Surname, Table 7, pp. 50-82.

William J. Page, Jr., and Earl E. Juyck. "Appalachia: Realities of Deprivation." Health, Education, and Welfare Indicators, U.S. Government Printing Office, Washington, D.C., June 1964, p. xviii.

A COMPARISON OF SCHOOL YEARS COMPLETED BY ANGLO, SPANISH SURNAME, AND NEGRO MALES 25 YEARS AND OVER IN THE SOUTHWEST: 1960

	ARIZONA			CALIFORNIA			COLORADO			NEW MEXICO			TEXAS			TOTAL SOUTHWEST		
	ANGLO	SPANISH SURNAME	NEGRO	ANGLO	SPANISH SURNAME	NEGRO	ANGLO	SPANISH SURNAME	NEGRO	ANGLO	SPANISH SURNAME	NEGRO	ANGLO	SPANISH SURNAME	NEGRO	ANGLO	SPANISH SURNAME	NEGRO
Percentage Distribution																		
None	0.8%	14.7%	6.4%	1.0%	10.3%	2.3%	0.8%	7.3%	2.5%	0.7%	9.2%	4.1%	1.2%	22.2%	5.4%	1.0%	14.8%	4.7%
Elementary: 1 to 4 years	3.4	22.9	18.9	2.9	15.5	9.8	3.0	17.3	6.7	3.5	21.2	12.8	6.2	29.2	18.2	3.9	21.5	16.4
5 and 6 years	4.6	14.4	13.6	4.0	11.5	10.4	4.1	14.2	7.5	4.5	14.2	12.8	8.2	15.2	15.0	5.4	13.4	13.2
7 years	4.7	6.8	9.1	4.3	5.9	7.6	4.4	8.6	5.9	4.3	8.4	7.4	7.5	5.5	10.1	5.2	6.1	8.9
8 years	15.8	15.1	15.0	14.2	13.7	13.3	18.3	17.3	13.0	13.7	13.8	10.9	11.6	6.7	11.4	13.7	11.3	11.9
High School: 1 to 3 years	19.3	11.9	18.9	19.7	18.9	23.8	17.4	17.4	20.9	18.9	14.2	17.8	20.2	8.7	19.0	19.6	14.2	19.8
4 years	25.2	8.9	11.2	25.7	14.5	19.1	26.0	11.0	24.5	26.7	10.9	23.4	21.6	7.2	12.5	24.5	11.1	14.6
College: 1 to 3 years	13.3	2.9	4.2	14.6	6.1	9.7	12.1	3.9	10.6	13.3	4.5	6.2	11.6	3.1	4.4	13.4	4.6	6.8
4 years or more	12.9	2.4	2.7	13.6	3.6	4.0	13.9	3.0	8.4	15.4	3.6	4.6	11.9	2.2	4.0	13.3	3.0	3.7
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Median School Years Completed	12.1	6.7	8.1	12.1	8.5	9.8	12.1	8.1	11.1	12.4	7.7	9.3	11.3	4.8	7.6	12.0	7.1	8.6

Anglo and Spanish-Surname percents and medians are based on absolute figures derived by subtracting Spanish-Surname from Anglo.

Negro percents and medians are based on absolute figures for Arizona, California, and New Mexico. Colorado and Texas percents and medians were based on nonwhite figures because the Census Bureau did not differentiate between non-white and Negro in these states. Nonwhite as defined by the Census Bureau includes Negro (92 percent of all nonwhite), Japanese, Chinese, American and Asian Indians, Filipinos, Koreans, Hawaiians, Malayans, Eskimos, Aleuts, etc.

Medians were computed using the method described by George A. Ferguson, Statistical Analysis in Psychology and Education, McGraw-Hill Book Company, Inc., New York, 1957, p. 47.

Sources:

United States Census, 1960; Persons of Spanish-Surname, Table 7, pp. 50-83; Non-White Population by Race, Table 19, p. 30, 0. 40; General Social and Economic Characteristics: Arizona, Table 47, pp. 59-60; California, Table 47, pp. 235-236; Colorado, Table 47, pp. 100-101; New Mexico, Table 47, pp. 71-72; Texas, Table 47, pp. 330-331; United States Summary, Table 76, p. 207.

APPENDIX XI

A COMPARISON OF SCHOOL YEARS COMPLETED BY ANGLO, SPANISH SURNAME, AND NEGRO FEMALES 25 YEARS AND OVER IN THE SOUTHWEST: 1960

		ARIZONA			CALIFORNIA			COLORADO			NEW MEXICO			TEXAS			TOTAL SOUTHWEST		
		ANGLO	SPANISH SURNAME	NEGRO	ANGLO	SPANISH SURNAME	NEGRO	ANGLO	SPANISH SURNAME	NEGRO	ANGLO	SPANISH SURNAME	NEGRO	ANGLO	SPANISH SURNAME	NEGRO	ANGLO	SPANISH SURNAME	NEGRO
Percentage Distribution																			
None		0.7%	11.9%	3.3%	0.9%	8.5%	1.6%	0.7%	6.6%	2.3%	0.7%	9.3%	2.8%	1.0%	23.6%	4.3%	0.9%	14.7%	3.1%
Elementary:	1 to 4 years	2.3	20.2	11.7	2.3	13.3	7.1	2.0	16.5	5.3	2.4	19.4	7.9	4.1	28.3	14.9	2.8	20.3	11.4
	5 and 6 years	3.7	16.3	12.3	3.6	12.1	9.4	3.2	14.5	7.3	3.7	14.4	11.6	7.2	16.7	14.3	4.6	14.4	12.2
	7 years	3.7	7.5	10.2	3.5	5.9	7.3	3.3	9.2	4.4	3.5	8.5	9.4	6.7	5.4	10.3	4.5	6.1	9.0
	8 years	13.7	15.7	15.2	13.4	14.7	13.1	15.4	17.0	13.7	10.8	14.5	11.2	10.9	6.5	12.1	12.7	11.6	12.6
High School:	1 to 3 years	20.9	13.3	22.9	20.5	20.5	25.2	18.2	17.1	21.3	20.2	15.1	23.3	22.5	8.2	21.0	20.9	14.7	22.7
	4 years	32.6	12.1	14.4	33.6	18.4	22.3	34.1	13.8	28.7	33.7	14.0	21.4	28.7	8.2	14.1	32.2	13.4	17.8
College:	1 to 3 years	13.6	1.8	6.2	14.2	4.6	9.9	14.0	3.6	10.6	14.7	2.7	7.7	11.5	1.9	4.4	13.4	3.2	5.8
	4 years or more	8.8	1.2	3.8	8.0	2.0	4.0	9.1	1.7	6.4	10.3	2.1	4.7	7.4	1.2	4.6	8.0	1.6	4.4
Total		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Median School Years Completed		12.2	7.2	8.8	12.2	8.7	10.4	12.2	8.2	11.4	12.3	8.8	9.9	11.7	4.7	8.5	12.1	7.1	9.2

Anglo and Spanish-Surname percents and medians are based on absolute figures derived by subtracting Spanish-Surname from Anglo.

Negro percents and medians are based on absolute figures for Arizona, California, and New Mexico. Colorado and Texas percents and medians were based on nonwhite figures because the Census Bureau did not differentiate between nonwhite and Negro in these states. Nonwhite as defined by the Census Bureau includes Negro (92 percent of all nonwhite), Japanese, Chinese, American and Asian Indians Filipinos, Koreans, Hawaiians, Malayans, Eskimos, Aleuts, etc.

Medians were computed using the method described by George A. Ferguson, Statistical Analysis in Psychology and Education, McGraw-Hill Book Company, Inc., New York, 1957, p. 47.

Sources:

United States Census, 1960; Persons of Spanish-Surname, Table 7, pp. 50-83; Non-White Population by Race, Table 19, p. 30, p. 40; General Social and Economic Characteristics: Arizona, Table 47, pp. 59-60; California, Table 47, pp. 235-236; Colorado, Table 47, pp. 100-101; New Mexico, Table 47, pp. 71-72; Texas, Table 47, pp. 330-331; United States Summary, Table 76, p. 207.

APPENDIX XII

A COMPARISON OF SCHOOL YEARS COMPLETED BY ANGLO, SPANISH-SURNAME, AND NEGRO MALES AND FEMALES, 25 YEARS OLD AND OVER, IN THE UNITED STATES: 1960

	Anglo		Spanish-Surname		Negro	
School Years Completed	Percent of Total	Cummulative Percent	Percent of Total	Cummulative Percent	Percent of Total	Cummulative Percent
MALE						
None	1.7%	1.7%	14.8%	14.8%	6.3%	6.3%
Elementary						
1-4 years	5.2	6.9	21.5	36.3	21.9	28.2
5-6 years	7.1	14.0	13.4	49.7	15.3	43.5
7 years	6.6	20.6	6.1	55.8	8.7	52.2
8 years	18.5	39.1	11.3	67.1	12.3	64.5
High School						
1-3 years	19.0	58.1	14.2	81.3	17.3	81.8
4 years	22.4	80.5	11.1	92.4	11.3	93.1
College						
1-3 years	9.1	89.6	4.6	97.0	4.1	97.2
4 years or more	10.4	100%	3.0	100%	2.8	100%
TOTAL	100%		100%		100%	
Number of persons	42,513,932		744,824		4,240,021	
Median Years of School	10.7		7.1		7.7	
FEMALE						
None	1.6%	1.6%	14.7%	14.7%	4.2%	4.2%
Elementary						
1-4 years	3.9	5.5	20.3	35.0	15.6	19.8
5-6 years	6.2	11.7	14.4	49.4	15.0	34.8
7 years	5.6	17.3	6.1	55.5	9.6	44.4
8 years	17.9	35.2	11.6	67.1	13.3	57.7
High School						
1-3 years	19.7	54.9	14.7	81.8	20.6	78.3
4 years	29.4	84.3	13.4	95.2	14.3	92.6
College						
1-3 years	9.6	93.9	3.2	98.4	4.1	96.7
4 years or more	6.1	100%	1.6	100%	3.3	100%
TOTAL	100%		100%		100%	
Number of persons	45,609,130		713,288		4,813,924	
Median Years of School	11.3		7.1		8.4	

All percentages are based on absolute figures. Anglo figure was computed by subtracting Spanish-Surname from General White Population.

Sources:

United States Census, 1960, Persons of Spanish-Surname, Table 7, pp. 50-82, Nonwhite Population by Race, Table 19, p. 30, United States Summary, Part I, Table 76, p. 207.